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DEFENSE INDUSTRY BULLETIN

March 1969

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Secretary of Defense

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DEFENSE INDUSTRY BULLETIN

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Suggestions from industry representatives concerning possible topics for future issues are welcomed and should be forwarded to the Editor at the address shown below.

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Defense Budget Highlights

Approach to the FY 1970-74 Program and FY 1970 Budget

[*Editor's Note: This issue of the* Defense Industry Bulletin *is devoted almost entirely to the statement on the FY 1970 Defense Budget and the FY 1970–1974 Defense Program released by former Secretary of Defense Clark M. Clifford on January 16, 1969.*

While space limitations permit only an abbreviated treatment of the statement, an attempt has been made to excerpt those portions which are of special interest to defense industry.]

In formulating our recommendations to the President on the FY 1970–74 program and FY 1970 budget, we have been very mindful of the extremely difficult financial situation confronting the nation, both at home and abroad. Wherever we could do so without endangering our national security, we have eliminated, stretched out, or deferred less essential projects and activities, thus reducing the FY 1970 budget requests of the Services and Defense Agencies by about $19.3 billion.

With regard to the conflict in Southeast Asia, it is clear that as long as U.S. and allied forces are engaged in combat, their needs must be provided in full. And, since we do not know at this time when or how the conflict might be terminated, we must assume for *budget purposes* that combat operations will continue at about their present levels through the various leadtimes financed in the FY 1970 budget, *e.g.*, 6 months beyond the end of the fiscal year for ammunition, 18 months for attrition aircraft, etc. If combat operations should cease within the year, some reductions could be made but, if the tempo of operations should rise above the levels projected, additional funds would be required.

With regard to the non-Southeast Asia portions of the program, we have again deferred those projects and activities which could safely be postponed to a later time and, of course, we have eliminated all nonessential and marginal items from the FY 1970 budget. However, there are a number of new programs of great importance to our future security, which cannot be safely deferred, and these will require greater amounts of funds in FY 1970 than in FY 1969.

We are requesting for FY 1970 a total of $80.6 billion in new obligational authority. Expenditures for that year are estimated at $79.0 billion, excluding those pay raises which will take effect automatically on July 1, 1969, and such other pay raises and changes in military compensations which may be enacted by the next session of the Congress. Provision for the pay raises are made in the Government-wide "Allowances for Contingencies."

We are also requesting a FY 1969 supplemental totaling $3 billion —$1.2 billion for the pay raises which went into effect on July 1, 1968 (an allowance for which had been made in the FY 1969 Government-wide "Allowances for Contingencies"), $190 million to cover increases in retired pay ($162 million) and certain reserve component personnel costs ($28 million), and $1.6 billion for additional Southeast Asia requirements which arose subsequent to the transmission of the FY 1969 budget to the Congress last January. These latter requirements are related to the new actions taken early last year as a result of the Communist Tet offensive in South Vietnam and the crises provoked by the North Koreans with their seizure of the USS Pueblo. The major categories involved here are higher-than-planned military personnel and operations and maintenance costs, and increased ammunition and spare parts procurement. Taking into account these additional requirements, plus the expenditure impact in FY 1969 of the FY 1968 supplemental, minus the $3 billion mandatory reduction in FY 1969 expenditures, we now estimate expenditures for that year at about $78.4 billion.

Assessment of the International Situation as It Bears on Military Policies and Programs

I am pleased to be able to report that the military posture of the United States remains strong; our national security is not in jeopardy from any adversary. Moreover, the international situation, although certainly marked by some disquieting elements, nonetheless gives us overall grounds for considerable hope that we may be able to look forward to a world marked by a lessening rather than an intensification of conflict.

The grounds for hope reside especially in two aspects of the international situation. First, there is now reason to believe that, in some measure, we have succeeded in shifting the focus of confrontation in Vietnam from the arena of the battlefield to that of the conference chamber. We have forced the enemy to the realization that, though he can still inflict great injury and misery on the people of South Vietnam, he is incapable of winning a military victory; and, moreover, his capability is declining with the passage of time and the growing strength of our Vietnamese allies.

We can—and should—now move explicitly toward a reduction in the level of conflict, and toward the mutual reduction—and the eventual elimination—of outside forces from South Vietnam. Last year we began the process of turning over to the government of Vietnam more responsibility for the conduct of the war. This year the process should continue and, I hope, accelerate. But we must not delude ourselves that the shift of emphasis from battlefield to conference table means that the war is won, or that there will not be difficult days ahead. We have already seen how difficult it is simply to get negotiations started. We know that all the parties have much at stake which they will not lightly concede. But I think that we have now set a true course toward peace in Vietnam.

The second aspect of the international situation which seems to me distinctly hopeful is the stated willingness of the Soviet Union to discuss with us the mutual limitation of strategic nuclear weapons. I believe that this willingness evidences recognition that increased security cannot be found simply in the procurement of additional strategic weapons—which may mean instead merely another upward spiral of the arms race, the economic costs which such a spiral implies, and a net reduction in safety for all mankind.

In contrast to these two hopeful signs are the disquieting acts of continued Soviet armed presence in, and pressure on, Czechoslovakia in the aftermath of the invasion of that country last August, and the current exacerbation of the bitter, smouldering conflict in the Middle East. Yet even in these instances the total picture is not unrelievedly bleak. The angry reaction of virtually the entire world, including a number of the Communist nations, made plain to the Soviets just how unacceptable is their behavior in Czechoslovakia. Concurrently, the events of August have spurred the members of the Atlantic Alliance to a greater cohesion and sense of shared purpose. We hope that this new spirit and energy will persist beyond the tensions of the moment, since the Alliance remains the keystone of our foreign policy with respect to Europe.

Similarly, the prospects of renewed large-scale warfare in the Middle East may have introduced greater realism into the policies of the Great Powers, particularly those of the USSR. However, it would be overly optimistic to suggest that the issues which generate this poisonous conflict are any nearer a settlement.

By and large, the forces which make for international community rather than international division have been strengthened over the past 12 months. The steadiness of the United States—in continuing to meet its commitments in Vietnam, in reaffirming its support of the Atlantic Alliance, in seeking to moderate the conduct of both sides in the Middle East, in negotiating a non-proliferation treaty which takes account of the just interests of both the nuclear and the non-nuclear powers—has in no small way contributed to this strengthening.

We must continue to play such a role. We must make it clear that although a new Administration will bring with it new people and new ways of conducting our nation's affairs, the broad thrust of our approach to the great problems of our time will remain what it has been over the past two decades: timely assistance to our friends, prudent use of the great military power at our disposal, a willingness to place our energies and our resources behind peoples who are willing to devote their own blood and treasure to the preservation of their own freedom and national independence.

This is not—let me be clear—any unseemly display of our power. It is recognition of the simple fact that in our inactions as well as our actions, because of the size and the great productivity of our population, our international behavior is bound to affect the behavior of virtually every other state in the world of states, and to have effects upon the quality of their life. Even if we pursue a course of isolationism, we can never be truly isolated. Thus it is only prudent to work towards outcomes that we would desire, rather than merely to hope that they will come about in the absence of our action. The peoples of the world are interdependent and will remain so, much as some among us might wish to retreat in time to a point when that was not so.

Notions like these are scarcely novel. They have figured time and time again in the statements of the previous Secretary of Defense, and in those of his predecessors. But the fact that all of the occupants of the office of Secretary of Defense have been convinced of their validity makes them no less important or meaningful today. They are notions which infuse all of the more detailed sections of this statement which follows. They are the reasons that we buy and maintain our military forces. And they are considerations which at all times govern the deployment of those forces.

* * * * * * * *

Military Assistance and Sales

There is no way to determine precisely what any nation's fair share of the burden of collective defense should be. In the past 20 years, the United States has transferred armaments valued at approximately $45 billion to allied and friendly nations in support of the policy of common security and a strategy based on forward defense. Over this span, the character of our contribution has changed significantly. I believe that it will change more in the years ahead. Whereas the annual total of military exports has remained relatively constant, there has been a rapid decline in grant materiel exported—from $4.2 billion in FY 1953 to $525 million in FY 1969—and a commensurate rise in the delivery of arms sold for either cash or credit.

In FY 1963 grant aid for materiel, training, or both, was programmed for 69 countries, the highest number of countries ever to receive U.S. grant assistance. By FY 1969 this number was reduced to 48 recipients. Such countries as Germany, Japan, the United Kingdom and France were able not only to support their own defense establishments without U.S. assistance, but also, in some cases, themselves to offer military aid to developing countries.

Regardless of the form of our assistance, its basic objective has remained the same: to ensure that other countries, individually and collectively, have the necessary military capability to deter aggression and, failing this, the capability to withstand an armed attack until supporting forces arrive. In brief, it is my belief that effective national forces in forward defense countries provide an in-place deterrent for which U.S. forces based outside that country are not a complete equivalent. To provide this deterrent on a long-term basis in such countries by deploying U.S. forces would tie them down, restrict the flexibility of U.S. decision making, and create the host of economic and political problems inherent in the stationing of foreign troops in sovereign nations.

Such forward defense countries as Korea, Taiwan, Greece and Turkey maintain defense establishments which they can neither completely equip nor adequately support from domestic resources without detriment to their economic development. We assume a portion of the costs of their military forces as part of our own defense burden. Where their economic strength has grown and circumstances permit, we have shifted more of the total defense burden to local governments through a phasedown of grant aid. Generally, the impact of the shift has been eased by utilization of credit sales. As these countries become able to finance their legitimate defense needs wholly from their own resources, we would expect to phase out U.S. Government credit as well. In some countries, however, for political as well as for military reasons, we shall probably want to retain the option of extending credit to facilitate sales of U.S. equipment and materiel.

In planning our military assistance and sales, we utilize a total resource approach. This involves not only U.S. military assistance and foreign military sales and credit, but all U.S. and foreign aid, including excess and long-supply transfers and programs financed by the Agency for International Development, and an analysis of the recipient country's own resources. Coordination with U.S. economic programs and the recipient's resources is essential for these countries, since we are striving to assure that U.S. military assistance is gradually phased into their own economic planning—ultimately having all key forward defense countries on a self-sustaining basis.

In accord with the obvious sentiment of the Congress and the changed priorities imposed by the budgetary demands of the Vietnam conflict, our proposed FY 1970 grant military assistance request under the Foreign Assistance Act is being held to the lowest level since the inception of the program in FY 1950. Our request totals $375 million, with first priority to be accorded to four forward defense countries, *i.e.*, Greece, Turkey, Korea, and Taiwan (almost 90 percent of the total). Based on experience and administrative factors, the U.S. share for support of International Military Headquarters and related agencies has been transferred for funding to the regular Defense Department budget.

The remainder of the FY 1970 program is in support of U.S. base rights in such countries as Ethiopia and Libya, modest training programs, and small but important internal security programs. In summary, in FY 1970, 22 countries will receive grant materiel aid and training while 26 countries will receive training alone. The total number of countries receiving some type of assistance under the Military Assistance Program is, therefore, 48.

As I have indicated, sales now constitute a substantial part of our overall arms transfer program. Total sales orders for FY 1970 are estimated at about $1.6 billion. Of this total, we expect government-to-government cash orders of about $600 million, and cash orders placed directly with U.S. industry of some $400 million. An additional $350 million will be against credit arranged for or provided by the Defense Department under the provisions of the Foreign Military Sales Act, and $250 million against credit arranged for by the Export-Import Bank for the industrial countries.

Impact of the Defense Program on the Balance of Payments

The year of 1968 witnessed a substantial improvement in the U.S. international balance of payments (IBP) position. The overall "liquidity" deficit for the first nine months of CY 1968 was running at an annual rate of about $1.1 billion, compared with a deficit of $3.6 billion for all of CY 1967. Based on preliminary data, the "official settlements" balance showed a surplus during the first nine months of CY 1968 running at an annual rate of $1.9 billion. In 1967, there was a deficit of $3.4 billion on the “official settlements” basis.

The 1968 results to date are a cause for some encouragement. The measures undertaken in accordance with President Johnson’s balance of payments action program of January 1, 1968, to control direct investment abroad and foreign lending by U.S. banks and other U.S. financial institutions, together with an increased flow of foreign capital to the United States, have been major factors underlying the improvement in 1968. However, the U.S. trade account surplus deteriorated seriously during the year. Accordingly, the President’s balance of payments action program has been extended into 1969, as announced last December.

The Defense Department has had for a number of years an extensive program to minimize the impact of its activities on our balance of payments. Figure 1 summarizes the balance of payments position on the defense account through FY 1968.

As can be seen, prior to the intensification of hostilities in Southeast Asia, we had reduced the net adverse balance on the defense account by almost half, from $2.8 billion in FY 1961 to $1.5 billion in FY 1965. This reduction was achieved in large part by a fourfold increase in our receipts (which stem primarily from sales of U.S. military goods and services to foreign countries), a reduction in uranium purchases abroad for defense purposes, and a successful effort to hold down our overseas expenditures in the face of substantial increases in foreign prices and wages and in the pay of U.S. Defense Department personnel.

Beginning in mid-1965, our expenditures increased rapidly due primarily to the conflict in Southeast Asia. In FY 1968, about $1.6 billion, or more than one-third of our total balance of payments expenditures, were attributable to that conflict. The rate of increase, however, slackened substantially during the year as U.S. troop deployments in the area were stabilized.

During the past year we have intensified our efforts to minimize the net impact of our activities on the nation’s balance of payments whereever we could do so without reducing necessary combat capability or creating undue hardship for our personnel and their dependents. Last fall we completed a reduction of approximately 35,000 military personnel in Western Europe, under previously announced plans. More recently, we succeeded in reducing our subsistence expenditures abroad by about $20 million and in holding down construction costs. We also have re-emphasized programs to hold down spending by our personnel stationed abroad. Our efforts in this area rest primarily on voluntary actions by our personnel stationed overseas to reduce expenditures in the local economy and to increase savings. In addition, new government-wide programs were undertaken to reduce the number of U.S. civilians working overseas and to reduce expenditures for official travel.

U.S. Military Balance of Payments

($ Billions)*

	FY 1961	FY 1965	FY 1966	FY 1967	FY 1968
Expenditures					
U.S. Forces & Their Support	$2.5	$2.6	$3.2	$4.0	$4.4
Military Assistance	.3	.2	.2	.1	.1
Other (AEC, etc.)	.3	.1	.1	**	**
Total	$3.1	$2.8	$3.4	$4.2	$4.5
Receipts	—.3	—1.3	—1.2	—1.8	—1.2
Net Adverse Balance	$2.8	$1.5	$2.2	$2.4	$3.3
Southeast Asia-related Expenditures	—	(**)	(.5)	(1.3)	$1.6)

* Details may not add due to rounding.

** Less than $50 million.

Figure 1.

Notwithstanding these efforts, defense expenditures abroad in FY 1969 are likely to continue their upward trend, albeit at a slower rate. Price and wage increases abroad, as well as pay raises for our own personnel, combined with somewhat higher average U.S. personnel strengths in South Vietnam will contribute to this trend.

Accordingly, we have renewed our efforts to achieve reductions, principally by further streamlining and tightening our operations overseas. Last year we focused particular attention on our operations in Western Europe, and we now plan to take a number of actions there which should have a beneficial effect on our balance of payments in FY 1970–71. We have also initiated an intensive examination of operations in Japan and Okinawa with the hope that some reductions might be feasible even under present conditions.

We have continued to maintain the military sales program, discussed earlier in this statement. In FY 1968, Defense Department receipts, which stem principally from this source, were at a level of about $1.2 billion, considerably below FY 1967. But as we indicated last year, FY 1967 receipts were abnormally high due to fulfillment of a payments commitment by the Federal Republic of Germany under the then existing military offset arrangements.

In this connection, it should be noted that the data shown in Figure 1 do not reflect the actions taken to neutralize the impact of defense spending abroad through special financial arrangements, such as the sale of U.S. long-term securities. Purchases of such securities by the Federal Republic of Germany and similar arrangements with other countries resulted in a capital inflow of about $800 million during FY 1968. If these financial arrangements are included, the net adverse balance on the military account for FY 1968 would be approximately the same as in FY 1967. We fully recognize, of course, that these financial arrangements do not represent a long-term solution to our balance of payments problem, and we will continue our efforts to achieve more permanent types of neutralization arrangements.

Strategic Forces

The forces and programs included under this heading, *i.e.*, the strategic offensive forces, the strategic defensive forces, and the civil defense program, constitute the foundation of our general nuclear war capabilities and are, accordingly, treated in this section of the statement as an integrated whole.

The Size and Character of the Threat

The continuing rapid expansion of Soviet strategic offensive forces, which could bring them abreast of the United States in numbers of land-based missiles by mid-1969, has become a matter of increasing concern. Other developments in the Soviet strategic forces, both offensive and defensive, together with the entry of Communist China into the ranks of the nuclear powers have added further complicating factors to the strategic equation. It might be useful, therefore, to commence this discussion of our strategic forces with a careful reexamination of the size and character of the threat as we see it now and over the next few years.

Again, our usual note of caution should be borne in mind as we discuss these most recent intelligence estimates. While we have reasonably high confidence in the estimates for the closer-in period, *i.e.*, through mid-1970, the projections beyond that point become progressively less certain, especially where they extend past the production and deployment leadtimes of the weapon systems involved.

Soviet Strategic Offensive and Defensive Forces

Summarized in Figure 1 are the Soviet strategic offensive forces estimated for Sept. 1, 1968. The programmed U.S. forces for this same date are shown for comparison.

Intercontinental Ballistic Missiles. We estimate that as of Sept. 1, 1968, the Soviets had approximately 900 ICBM launchers operational, compared with 570 in mid-1967 and 250 in mid-1966—an increase of well over threefold in a period of a little more than 2 years. The rate of increase over the past year has been somewhat greater than estimated a year ago. However, we believe the rate of increase will be considerably smaller over the next two or three years. Beyond that point, our estimates become less firm.

We have been anticipating for some time a Soviet deployment of a solid fuel ICBM. We now believe the deployment of such a missile has started, although at a relatively slow rate.

With regard to the Soviet Fractional Orbit Bombardment System (FOBS), which attracted so much attention last year, our estimates are now quite uncertain. It is possible that the Soviets are trying to develop a weapon which could perform as a depressed trajectory ICBM, a FOBS, or a dual system. A system of either type could reduce the possibility of timely detection by our Ballistic Missile Early Warning System (BMEWS), but not by our planned Over-The-Horizon (OTH) and satellite-borne missile warning systems. Neither missile system, however, would have a very high order of accuracy and, therefore, they would be useful primarily against soft targets. Because of the uncertainties concerning the characteristics and purposes of this weapon system, we are unable at this time to estimate its deployment. Accordingly, it has been dropped from the estimates as a separate system and included with the other weapon systems launched by the same booster.

Submarine-Launched Ballistic Missiles (SLBMs). We have known for some time that the Soviets were constructing a new class of nuclear-powered ballistic missile submarines, and that they were testing a new submerged-launched ballistic missile out to a range of about 1,500 nautical miles. The first of these new submarines became operational last year. Together with a number of older H–class vessels, the Soviets in September 1968 had approximately 45 SLBM launch-

U.S. vs Soviet Intercontinental Strategic Nuclear Forces

	Sept. 1, 1968	
	U.S.	USSR
ICBM Launchers [a]	1,054	900
SLBM Launchers [b]	656	45
Total Intercontinental Missile Launchers	1,710	945
Intercontinental Bombers [c]	646	150
Total Force Loadings—Approximate Number of Warheads	4,200	1,200

[a] U.S. and Soviet ICBM launchers used for training and development are excluded. Training and development launchers are included in the total force loadings. Only submarine-launched ballistic missiles (SLBMs) on deployable submarines are included in total force loadings.

[b] In addition to the SLBMs on nuclear-powered submarines, the Soviets have SLBMs on diesel-powered submarines whose primary targets the intelligence community estimates to be strategic land targets in Eurasia. The Soviets also have submarine-launched cruise missiles whose primary targets are believed to be naval and merchant vessels.

[c] We include only heavy bombers which could fly two-way intercontinental missions. The Soviets also have a force of medium bombers and tankers capable of striking Eurasian targets.

Figure 1.

LAUNCH OF POSEIDON MISSILE from Cape Kennedy. The Poseidon refit program entails conversion of 31 SSBNs, to be completed in FY 1975.

ers in their nuclear-powered ballistic missile submarine force. In addition to the SLBMs on nuclear-powered submarines, the Soviets have SLBMs on diesel-powered submarines whose primary targets the intelligence community estimates to be strategic land targets in Eurasia.

As noted on previous occasions, the Soviets do not appear to consider their cruise missile submarines a strategic attack system. We believe they are designed primarily for use against ships, but can be used against shore targets.

Manned Bombers. The estimate of the Soviet manned bomber force is essentially the same as presented last year. There is still no evidence that the Soviets intend to deploy a new heavy bomber in the early 1970s. In addition to the 150 heavy bombers shown in Figure 1, the Soviets also have over 700 medium bombers.

Medium Range Ballistic Missiles (MRBMs) and Intermediate Range Ballistic Missiles (IRBMs). No significant changes have occurred in the overall size of the Soviet MRBM and IRBM forces during the last year. These forces appear to have leveled off with about 700 operational launchers, some of which are hardened. However, evidence is accumulating that the Soviets have embarked on the development of solid fuel missiles for medium and intermediate, as well as intercontinental ranges.

Manned Interceptors. The Soviet strategic interceptor force now consists of several thousand aircraft, but a slow downward trend has been in evidence for a number of years. Moreover, a large percentage of that force still consists of subsonic or low-supersonic models introduced in 1957 or earlier, *i.e.*, Mig–17s, Mig–19s and Yak–25s. Most of these older models are day fighters and are armed with guns or rockets. A smaller portion of the force is composed of supersonic all-weather interceptors introduced in 1959–64, which are armed with short-range, air-to-air missiles. A still smaller portion of the force is made up of new aircraft, *i.e.*, Yak–28s, TU–28s and the Flagon–A, equipped with longer-range missiles and improved radars. We believe the last two models are still in production and will continue to enter the force.

Beyond the Flagon–A is the Foxbat. This aircraft, still in the development stage, is no doubt a very high performance fighter interceptor.

Surface-to-Air Missiles. Except for the so called "Tallinn" system, there have been no significant changes in the deployment of surface-to-air missiles in the Soviet Union during the last year. With respect to the Tallinn system, the passage of another year has convinced a majority of the intelligence community that it is designed against fast, high flying aerodynamic vehicles, rather than ballistic missiles, although the latter is a possibility which cannot be excluded. As expected, the deployment of this system is continuing.

Anti-Ballistic Missile Defense

During the past year, the Soviets apparently curtailed construction at some of the Galosh ABM complexes they were deploying around Moscow. The significance of this action cannot as yet be ascertained. However, it is the consensus of the intelligence community that the Galosh system, as presently deployed, could provide only a limited defense of the Moscow area, and could be seriously degraded by currently programmed U.S. weapon systems. Nevertheless, until we achieve a workable agreement with the Soviet Union on the limitation of ABM deployments, we must continue to plan our strategic offensive forces on the assumption that they will have deployed some sort of an ABM system around their major cities by the mid-1970s.

The Chinese Communist Nuclear Threat

The Chinese Communists have had for a number of years the technical and industrial capabilities required for the development and deployment of nuclear-armed ballistic missiles. From October 1964 through December 1967 they detonated seven nuclear devices, including three thermonuclear and one low yield device delivered by a missile. (On Dec. 27, 1968, the Chinese Communists detonated their eighth nuclear device. This test was similar to the sixth, conducted in June 1967. Both were apparently thermonuclear devices with yields of about three megatons which were air-dropped. The seventh test, conducted in December 1967, was apparently a partial failure.)

On the basis of the first seven nuclear tests and their continuing work on surface-to-surface missiles, we estimated last year that they could have their first MRBMs (700–1,000–nautical mile range) deployed as early as 1967–68, and that by the mid-1970s they could have a modest force operational. However, we still have no firm evidence indicating deployment of these missiles. The apparent failure to begin deployment at least by the end of 1968 would seem to indicate that they have encountered serious problems with the initial system, or that the program has simply fallen victim of the Cultural Revolution and the widespread disruption which that revolution has caused throughout the entire fabric of Chinese society. If the latter, work on these missiles may have been resumed by now, as was the case with the nuclear tests. But in view of all the uncertainties, we now believe that an initial operating capability with an MRBM will occur later than previously estimated.

These same circumstances have also caused us to alter our estimates on the deployment of a Chinese ICBM. Two years ago we had estimated that they would conduct either a space or a long-range missile test launching before the end of 1967. We now believe that an initial operating capability with an ICBM will not be achieved until 1972 at the earliest, and more likely later. In any event, we will almost certainly detect extended range firings once they begin and that should give us some advance warning of an initial operating capability.

We have no basis at this time for estimating how far or how fast the Chinese will carry deployment of their first generation ICBM. Assuming that political and economic stability will be reestablished within the next year or so, China could probably generate enough resources to support a moderate and growing ICBM deployment through 1975. Beyond that time frame, there is a possibility that China might significantly improve the initial system, which we believe will not have a very high degree of survivability, accuracy, or reliability.

The Chinese Communists also have several types of aircraft which could carry nuclear weapons, but most of them have a limited operational capability and none have an intercontinental radius. It is highly unlikely, on the basis of cost alone, that they would undertake the development, production and deployment of an intercontinental bomber force. If they chose to do so, it would take them a decade or more before they could deploy such a force.

Strategic Nuclear War Policy

It is quite apparent from the foregoing review of the threat that the Soviet Union is moving vigorously to catch up with the United States at least in *numbers* of strategic missiles—both land-based and sea-based. But, it is also apparent that they are still well behind us in advanced missile technology—accuracy, multiple independent reentry vehicles (MIRVs), and penetration aids. Indeed, their new solid fuel ICBM appears to be no better than our earliest Minuteman missiles, first deployed in FY 1963. Their new ballistic missile submarine is probably most comparable to our earliest Polaris submarines which first became operational about a decade ago. Their Galosh ABM system resembles in certain important respects the Nike-Zeus system which we abandoned years ago because of its limited effectiveness. Their Bison and Bear long-range bombers are distinctly inferior to our B–52s, and we have long since eliminated from our forces the B–47s which were clearly superior to their Badger medium bombers.

Accordingly, it is reasonable to conclude that even if the Soviets attempt to match us in numbers of strategic missiles we shall continue to have, as far into the future as we can now discern, a very substantial qualitative lead and a distinct superiority in the numbers of deliverable weapons, and the overall combat effectiveness of our strategic offensive forces. But even so, we should have no illusions that superiority alone will guarantee our safety. It has become increasingly clear over the years since the end of World War II that once the Soviet Union, as well as the United States, acquired large, protected intercontinental strategic offensive forces neither one could expect to emerge from an all-out nuclear exchange without very grave damage —regardless of which side had the most weapons or which side struck first. This is so because of the enormous destructive power of a single nuclear weapon, the speed and accuracy with which it can now be delivered to its target, and the very great technical difficulties involved in defending against any very large number of them.

Many knowledgeable Americans, both within and without the Government, have wrestled with this problem over the years. There is now a very broad consensus that until a truly safeguarded nuclear disarmament agreement is achieved in the context of viable world-wide security arrangements, the only realistic policy we can pursue at this particular juncture is one of deterrence. In other words, we must be prepared to maintain at all times strategic forces of such size and character, and exhibit so unquestionable a will to use them in retaliation if needed, that no nation could ever conceivably deem it to its advantage to launch a deliberate nuclear attack on the United States or its allies.

While the general policy objective of deterrence has been clearly defined and firmly established in recent years, the size and character of the forces required for its support remain the subject of continuing debate. In large part, this debate is concerned with the number and kinds of specific weapon systems and when they should be introduced into our forces. These issues can never be finally resolved, inasmuch as the strategic threat confronting the nation is continually changing, and our own advancements in military technology are always opening up new possibilities for both offense and defense.

But, in addition to these specific weapon systems issues (which will be discussed in detail later), there is a more fundamental problem, and that is the relative weights which should be given to our "Assured Destruction" and "Damage Limiting" objectives in planning our strategic forces. (Assured Destruction is defined as the ability to inflict at all times and under all foreseeable conditions an unacceptable degree of damage upon any single aggressor, or a combination of aggressors—even after absorbing a surprise attack. Damage Limiting is the ability to reduce the potential damage of a nuclear attack upon the United States through the use of both offensive and defensive weapons.)

It is generally agreed that the primary deterrent is our ability to destroy the attacker in retaliation, even after absorbing his first blow, and not our ability to limit damage to ourselves. Damage limiting measures could, of course, contribute to the deterrent—if they could be made truly effective, *i.e.*, reduce damage to some nominal level even after the opponent responded by increasing his offensive forces. But on the basis of our present knowledge of military technology, we still see no practical way in which to do this against the kind of attack the Soviets could potentially mount in the 1970s. Accordingly, our best alternative is to continue to base our policy of deterrence primarily on our Assured Destruction capability.

Even so, it could still be argued that some Damage Limiting capability should be provided as a hedge against the possibility that deterrence might fail. This matter has been vigorously debated over the last four or five years, but the prospects for even a reasonably effective Damage Limiting capability against the Soviet ballistic missile threat are quite uncertain because the USSR could make offsetting improvements in their missile forces which could seriously reduce the effectiveness of any extended ABM defense we might choose to deploy at this time.

The provision of an effective Damage Limiting capability against Communist China is quite another matter. As noted earlier, the Chinese strategic threat, at least through the mid-1980s, is expected to consist of a relatively small force of first generation ICBMs. Against such a force, a thin ABM defense, such as our presently planned Sentinel system, is both technically and economically feasible and should be able to offer a very high degree of protection to our population and industry. The Sentinel system could, of course, be employed against a Soviet ICBM attack as well, but it would have little effect on the final outcome of that attack. Its existence, however, will contribute to our deterrent by complicating the Soviets' targeting problem and adding to the many uncertainties which are already inherent in planning a strategic nuclear attack.

We remain convinced, however, that insofar as the Soviet threat is concerned, we should continue to give first priority in the allocation of available resources to the primary objective of our strategic forces, namely, Assured Destruction. Until technology progresses to the point where an effective ABM defense against the Soviet threat becomes feasible, our major hope for limiting damage if a nuclear war occurs is that it can be stopped short of an all-out attack on our cities. We try to bring this about by providing our forces with characteristics that will permit them to be used effectively in a limited and controlled retaliation as well as for Assured Destruction, thereby being prepared for any type of Soviet attack.

We also remain convinced that we must explore with the utmost diligence every avenue of negotiation which might lead to a meaningful and verifiable agreement on the limitation of strategic forces—both offensive and defensive. We stand on the eve of a new round in the armaments race with the Soviet Union, a race which will contribute nothing to the real security of either side while increasing substantially the already great defense burdens of both. Conversely, an appropriately designed and safeguarded limitation agreement can maintain our deterrent posture at present levels and enhance the stability of the strategic balance. The Soviet incursion into Czechoslovakia made the opening of talks on this matter inappropriate last year. It is our hope that the Soviet leaders will reestablish an atmosphere in which talks can begin.

Meanwhile, we should move forward promptly on the ratification of the Non-Proliferation Treaty which now lies before the Senate. This treaty does not provide any unique advantages for the Soviet Union. The United States and all other signatory nations will share equally from the benefits which it provides.

Capabilities of the Proposed U.S. Forces for Assured Destruction

While numbers of Soviet and U.S. warheads, delivery systems, megatons, and many other factors are taken into account in the analysis of our strategic forces requirements, the soundest measure of the effectiveness of these forces in the Assured Destruction role is their ability, even after absorbing a well-coordinated surprise strike, to inflict unacceptable damage on the attacker. The following two sections of this statement summarize the results of our most recent analysis of our Assured Destruction capabilities: first, against the "Highest Expected Threat" projected in the latest National Intelligence Estimates (NIE) . . . and, second, against a "Greater-Than-Expected Threat" specifically designed to test the adequacy of our forces in the unlikely event that the Soviets move significantly beyond our highest expectations.

Capability Against the "Highest Expected Threat" in the NIE

Our calculations indicate that the U.S. strategic forces programmed over the next few years, even against the highest Soviet threat projected in the NIE, would be able to destroy in a second strike more than two-fifths of the Soviet population and about three-quarters of their industrial capacity.

With regard to Communist China, a relatively small number of warheads detonated over the 50 largest cities would destroy half of their urban population and more than half of their industry. While these cities contain a relatively small proportion of China's total population, they do account for most of the key government officials and a large majority of the scientific, technical and skilled workers.

Thus, by any definition of the term, our Assured Destruction capability now, and over the next several years, should be fully adequate even against the highest expected threat projected in the most recent NIE. This capability, however, is of such crucial importance to our security, providing as it does the very sinew of our deterrent policy, that we must always be prepared to cope with unexpected developments in the Soviet strategic threat. Accordingly, we must continually reexamine the various ways in which the Soviets might seek to strengthen their strategic forces beyond what now seems probable, and take appropriate actions now to hedge against them.

Capability Against "Greater-Than-Expected Threats"

There are a number of ways in which the Soviets might attempt to degrade our Assured Destruction capability in the 1970s. They could develop and install highly accurate MIRVs in their large ICBMs; greatly improve the accuracy of their missiles; construct an extensive, effective ABM system (including both area and terminal defenses); and deploy a large Airborne Warning and Control System (AWACS)/interceptor force with a good look-down, shoot-down capability, together with an extensive, effective low altitude surface-to-air missile (SAM) system.

Any one of these actions alone would pose no particular threat to our Assured Destruction capability. But, if they were to do all of these things simultaneously, which would appear to be highly improbable on purely economic grounds, they might be able to degrade seriously the Assured Destruction capability of our strategic forces as presently planned. A Soviet ICBM force with a substantial hard target kill capability would be able to destroy a large number of our land-based missiles in hard silos. An extensive, effective Soviet ABM defense might then be able to intercept and destroy a large part of our residual missile warheads, including those carried by submarine-launched missiles. A large AWACS/interceptor force (with a good look-down, shoot-down capability), coupled with an extensive, effective low altitude SAM system, could destroy a very sizeable number of our bombers before they could reach their targets.

While the foregoing threat is both quantitatively and qualitatively far greater than that projected in the latest intelligence estimates, we cannot foreclose the possibility that all of these developments may occur, and occur simultaneously. Accordingly, we must take timely action now to place ourselves in a position where we can move forward promptly to meet any or all of these threats should they actually materialize.

SHORT RANGE ATTACK MISSILE (SRAM), to strengthen the penetration capabilities of our manned bombers against a possible vastly improved Soviet air defense system.

We have already taken a number of important actions which would permit us to cope with a large scale Soviet ABM system, *e.g.*, Minuteman III, Poseidon and the missile penetration aids program. To hedge against the possibility that the Soviets might install MIRVs in their large ICBMs and greatly improve the accuracy of their smaller ICBMs, we have initiated the development of a super-hard silo which could accommodate the Minuteman III or a new, larger ICBM. To improve the survivability of our alert bombers from an SLBM attack, we are developing an early warning satellite and dispersing our bombers to secondary bases so that our alert bombers can be launched in the warning time provided by the satellite. To strengthen the penetration capabilities of our manned bombers against a possible vastly improved Soviet air defense system, we are producing a new Short-Range Attack Missile (SRAM), and are developing a new long-range Subsonic Cruise Armed Decoy (SCAD) for both our B–52 and FB–111 bombers. And, of course, we are doing preliminary development work on a new sea-based missile system, a new land-based missile system, and a new manned bomber.

In addition to the actions already taken, we have a number of other available options. We can increase from 40 to 60 percent the proportion of bombers held on 15-minute ground alert; expand the presently planned Sentinel system to include the defense of our Minuteman sites; accelerate the deployment of Minuteman III; load the Poseidon with more warheads than presently planned (or add penetration aids); and construct new ballistic missile submarines. If the emerging threat requires, we can accelerate development of a new, larger land-based or sea-based missile, a new manned bomber—known as the Advanced Manned Strategic Aircraft (AMSA), or all three.

We need not take any of these steps until we have some evidence that the threat is actually beginning to emerge. Instead, we should carefully pace our actions on all of them in step with the development of the threat, keeping in mind the various development, production and deployment leadtimes involved. Maintaining a reasonable balance between each of the threats and each of the responses at all times is admittedly a very difficult task. But, taking our strategic posture as a whole, we have an ample margin of safety and we can afford to proceed with due deliberation on very costly new programs. Our technological base in this area is very deep and broad, and there is no reason why we should not be able to respond, quickly and effectively, to any technological surprises on the part of the Soviet Union.

Capabilities of the Proposed Forces for Damage Limitation

As was the case last year, the two major issues in this portion of the strategic forces program concern the deployment of an anti-ballistic missile defense system and the future size and composition of the anti-bomber defense forces.

Anti-Ballistic Missile Defense

No single defense issue in recent years has engendered greater controversy than the question of deploying an ABM defense. Differences in viewpoint on this matter range across the entire spectrum—from no deployment at all to massive deployment against the Soviet threat. Involved in this issue are a variety of foreign policy, strategic, technical and economic questions—all of which are interrelated. High on the list of the foreign policy questions is the effect of a U.S. ABM deployment on the prospects for successful negotiations with the Soviet Union on the limitation of strategic forces and, in the absence of negotiations, its impact on the U.S.-Soviet strategic competition. The strategic and technical questions are closely intertwined and have to do chiefly with the action-reaction phenomena inherent in the Assured Destruction-Damage Limiting problem, both for ourselves and the Soviet Union. It stands to reason that if both sides are indeed determined to maintain an Assured Destruction capability against each other, then each side will be forced to react to any attempt by the other significantly to increase its Damage Limiting capability. The economic questions involve primarily the high cost of ABM defenses and the impact of these costs on other national programs, both military and civilian.

To a considerable extent, the deep division of opinion on the ABM deployment issue is a result of the widely differing emphasis given to these various questions. For example, those who are primarily concerned with the economic and social costs of the program tend to denigrate the technical feasibility of the system and take a more relaxed view of the threat. In contrast, those who are primarily concerned with the threat tend to stress the technical feasibility of the system and take a more relaxed view of the economic and social costs.

Certainly, there is ample room for differences of judgment on each of these questions, but these differences should not be allowed to obscure the basic facts about the system—its technical feasibility, its cost and its effectiveness in various roles and against various threats. After almost a decade and a half of research and development effort and the expenditure of more than $4 billion, Defense Department and contractor personnel most closely associated with the project are fully convinced that an ABM defense system is technically feasible in the sense that they believe we can develop and install a system which would be able to identify, track and destroy an incoming ballistic missile warhead under certain specified conditions. How effective such a system would be against an actual attack is quite another matter. That would depend upon the purpose the system is intended to serve.

We have defined, over the last few years, at least three major purposes for which we might want to deploy an ABM system:

- Defense of our Minuteman silos as a partial substitute for the further expansion of our offensive forces in the event the Greater-Than-Expected Soviet threat begins to emerge.
- Protection of our population and cities against the kind of limited and unsophisticated ICBM attack the Chinese Communists might be able to launch in the 1970s (and an accidental or unauthorized firing from any source).
- Protection of our population and cities against the kind of heavy, sophisticated missile attack the Soviets could launch in the 1970s.

The first major purpose has already been touched upon in connection with the discussion of our Assured Destruction capabilities against the Greater-Than-Expected Soviet threat. To the extent that a defense of Minuteman can be distinguished from a defense of our cities, such an ABM deployment improves our Assured Destruction capability without threatening the Soviets' Assured Destruction capability. The other two major purposes, however, are directly related to our Damage Limiting capabilities; the second complicates, while the third would threaten the Soviets' Assured Destruction capability.

Defense Against the Chinese Communist Nuclear Threat. As noted earlier, although the Chinese Communists have yet to launch their first ICBM, we still believe they are working on such a system and intend to deploy it. They have clearly demonstrated their ability to develop and produce nuclear warheads, and we have ample evidence that they have been testing medium range ballistic missiles. Even if their ballistic missile programs proceed at the relatively slow pace of the past year, they could have a modest force of ICBMs sometime after the mid-1970s.

In the light of Chinese Communist progress in nuclear weapons and missile delivery systems, and given the present hostility of the Chinese leadership towards the United States, we believe it is both prudent and feasible on our part to deploy the Sentinel ABM system designed to protect against this threat.

Moreover, we believe that our possession of such a defense would provide greater assurances to the non-Communist nations of Asia that we intend to support them against attempts at nuclear blackmail by China and, thus, help to convince them that the acquisition of nuclear weapons is not required for their security.

As shown in Figure 2, a ballistic

U.S. Fatalities from a Chinese First Strike, 1975–1980

No. of Chinese ICBMs	x	2.5x	7.5x
U.S. Fatalities (millions)			
Without Sentinel	7	11	23
With Sentinel	[a]	[a]	1

[a] Fewer than one million U.S. dead, with some probability of no deaths.

Figure 2.

missile defense system specifically designed against the Chinese threat *i.e.*, the Sentinel system with its Perimeter Acquisition Radars (PARs), Missile Site Radars (MSRs), long-range Spartan area defense missiles and Sprint local defense missiles for the defense of the PARs, would offer a high degree of protection for our entire population.

As indicated in the third column of Figure 2, without the Sentinel system we might suffer as many as 23 million fatalities from an attack by a Chinese ICBM force. With the Sentinel, we might be able to hold fatalities to 1 million or less.

There should be no question about the technical feasibility of the system against the kind of Chinese ICBM threat shown in Figure 2. We already know enough about the radars and missiles to have confidence that they will perform as expected, and that the system as a whole will have a very high level of effectiveness against such a threat.

Whether this degree of protection is worth the initial investment cost of the Sentinel system ($5 to $6 billion) is a matter of judgment. If those who believe that the possibilities of a Chinese Communist ICBM attack upon the United States are extremely remote under any conceivable circumstances are correct, the cost of the Sentinel system would be excessive. But, if those of us are correct who believe that an ABM defense against China will provide a measure of insurance that our strategic deterrent will, under *all* circumstances, remain credible to China and our allies, the cost would be commensurate with the benefits received.

If and when the Chinese ICBM force continues to grow, quantitatively and qualitatively, beyond the levels shown in Figure 2, improvements can be made in the basic Sentinel system to maintain its effectiveness. We believe that for relatively modest additional outlays the system can be improved so as to limit the Chinese damage potential to low levels into the mid-1980s.

The Sentinel system would also have a number of other advantages. It would serve as a foundation to which we could add a defense for our Minuteman and bomber forces, if that later becomes desirable. Or, if technology progresses to a point where the deployment of an ABM defense against the Soviet Union becomes feasible, and otherwise desirable, it could serve as a base for a larger, more extensive system. Finally, it could protect our population against the improbable, but possible, accidental launch of a few ICBMs by any one of the nuclear powers.

Deployment of ABM for Defense of Our Cities Against Soviet Attack. While we are convinced that an effective ABM defense against the kind of threat the Chinese Communists might be able to mount in the 1970s and early 1980s is both technically and economically feasible, we are equally convinced that such a defense against the Soviet threat is not presently attainable. In contrast to Mainland China, the Soviet Union has the technical and economic resources needed to offset any strategically significant Damage Limiting advantages we might gain by the deployment of an extensive ABM defense.

Accordingly, if we believe that the Soviets are determined to deter us by maintaining a capability to inflict great damage upon us, we must also assume they would act promptly to offset any extensive ABM defense we might choose to deploy by increasing the effectiveness of their strategic offensive forces. They could do so by installing MIRVs and penetration aids in their currently projected missile forces, deploying new, larger payload mobile ICBMs, deploying more SLBMs, etc. In that event, we would still find ourselves in a position where a Soviet attack could inflict unacceptable damage on our population and cities, even after we have spent many billions of dollars for ABM defense.

Conversely, should the Soviets seek to limit damage to themselves by deploying a large ABM defense, we would be forced to increase the effectiveness of our strategic offensive forces as, in fact, we have already done to a considerable extent in anticipation of just that eventuality.

Thus the deployment of an extensive ABM defense by either side will, in all likelihood, simply fuel the strategic armaments race, with great additional costs but no commensurate benefits to either side. It was primarily for this reason that President Johnson two years ago proposed to the Soviet Union the opening of talks leading to an agreement on the limitation of ABM deployments, specifically, and strategic forces, generally. In July of last year, we and the Soviets confirmed our agreement to hold talks on limiting offensive and defensive missiles at an early date. Notwithstanding the delay made necessary by the Soviet invasion of Czechoslovakia, that is still our objective.

Meanwhile, we propose to press forward energetically with the Sentinel program and the development of more advanced ABM technology. Until a workable agreement with the Soviet Union on these matters is achieved, we must keep open the option of deploying an ABM defense against the Soviet missile threat should such a defense prove to be both feasible and desirable at some future time.

Anti-Bomber Defense

A year ago the Defense Department presented to the Congress a new plan for the modernization of our air defense forces. This plan was the product of a very comprehensive analysis of the air defense problem—the purposes an air defense system might serve in the 1970s, the possible future threats, the status of our technology, and the effectiveness and cost of the major alternatives available to us.

Briefly, the analysis delineated six possible purposes:

- Peacetime identification.
- Limiting damage to our cities from a Soviet manned bomber attack.
- Preventing damage from an air attack by other countries, *e.g.*, Cuba.
- Precluding a manned bomber attack on our withheld strategic missile forces.
- Discouraging the Soviet Union from developing and introducing new bomber threats which would be costly to neutralize.
- Providing a complete mobile "air defense package."

Although the Soviet heavy bomber force is expected to continue its gradual decline and medium bombers are not expected to play an important role in an attack on the continental United States, a number of Greater-Than-Expected threats were also taken into account. These included the possibility that the Soviets might use their medium bombers in one-way attacks against the continental United States, the deployment of a new, intercontinental supersonic bomber, and the introduction of a new, long-range, air-to-surface missile.

Three alternative "modernized" U.S. air defense forces, in addition to the current force, were evaluated against each of the foregoing purposes and threats: AWACS and F–12s; AWACS and F–106Xs; AWACS, F–106Xs and a few F–12s. In all but the "current force" alternatives, the entire SAGE–BUIC ground environment would be phased out, leaving only the FAA-operated radars for peacetime air surveillance, plus the new Over-The-Horizon (OTH) "backscatter" radars to provide an aircraft early warning capability.

The alternative with the lowest investment cost would obviously be the current force, but it would also be the one with the highest annual operating cost. Of the three modernization alternatives, the AWACS/F–106X force would have the lowest investment and annual operating cost, while the AWACS/all F–12 force would have the highest.

With regard to effectiveness, we have reached the following major conclusions:

- No air defense system can provide a significant Damage Limiting capability against the Soviet Union unless accompanied by a strong, effective ABM defense.
- The AWACS/F–12 force should be superior in discouraging the Soviet Union from deploying a new, long-range, air-to-surface missile (ASM) or a new intercontinental supersonic bomber, whereas the AWACS/F–106X force would be superior in discouraging them from deploying SRAMs, decoys and self-defense missiles on their bombers. The AWACS/F–106X force would also be superior against the present Soviet bomber threat.
- In any "modernized" air defense force, AWACS would be of the first order of importance, the fire-control/missile system, second, and the performance of the interceptor aircraft, third.
- Even if the Soviets were to phase out their remaining bomber force, the AWACS/F–106X would provide the most flexible force for use in theater air defense and special contingencies.

Since we have no evidence that the Soviets are developing either a new, long-range ASM or a new intercontinental supersonic bomber, the AWACS/F–106X force seems to be the proper choice at this time.

The remaining portions of this Strategic Forces section of the statement deal with our specific proposals for the FY 1970–74 period.

AIRBORNE WARNING AND CONTROL SYSTEM. In any "modernized" air defense force, AWACS would be of the first order of importance.

AIRBORNE WARNING AND CONTROL SYSTEM
(AWACS-ADC)

Strategic Offensive Forces

Strategic Bomber Forces

The manned bomber forces which we propose to maintain through FY 1974 differ in three major respects from those presented to the Congress last year for the FY 1969–73 period. First, we now propose to cut back the FB–111 force from the 14 combat squadrons (210 unit equipment aircraft) planned last year. Second, we plan to retain the B–58 force beyond the previously planned phase-out date in FY 1971. Third, we plan to retain a number of B–52C–Fs in the force instead of retiring all of them by end FY 1972 as previously planned. In addition, we propose to continue with competitive designs for the AMSA to provide a hedge against our possible bomber requirements in the late 1970s.

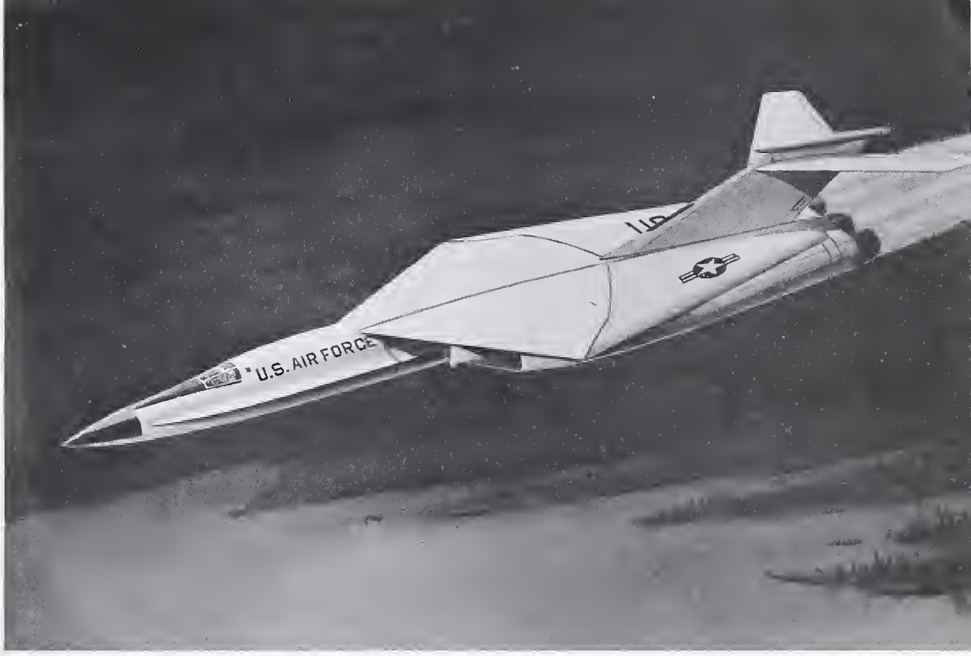
Our continuing study of the manned bomber requirement during the last year has reenforced our previous conclusion that the principal problem in this area of the program is penetration capability, more specifically, the ability of the force to survive in a much more advanced Soviet air defense environment in the mid-1970s. What is needed to operate effectively in such an environment is not so much a new aircraft, but rather new penetration aids and weapons. One of these new weapons, the Short-Range Attack Missile (SRAM) is now well along in development and will be entering the forces in the early 1970s. Development will be initiated in FY 1970 on still another new weapon, the Subsonic Cruise Armed Decoy (SCAD). Work is also continuing on a variety of improved electronic warfare countermeasures equipment.

Because the FB–111 is considerably smaller than the B–52, it cannot carry the kind of penetration payload required to cope successfully with a Soviet AWACS/interceptor force possessing a good look-down, shoot-down capability. Furthermore, once we introduce SCAD and SRAM into the force, the FB–111 becomes relatively much less effective because it can carry far fewer of these weapons than the B–52. Finally, the cost of the FB–111, for a number of reasons, is running considerably higher than estimated at the time the decision was made to proceed with deployment.

In the light of these developments, we believe it would be advisable to reduce the FB–111 force levels. A total of 104 complete aircraft plus long leadtime components for eight more are already on order. (This program reflects the reductions made by the Congress in the FY 1969 defense budget.) We now plan to complete the funding of the eight advance procurement aircraft and buy a sufficient number of additional aircraft to complete the equipping of the authorized squadrons and provide for command support, training and advance attrition. Because of this change and the need to modify the wing box, the first FB–111s will enter the force in early FY 1970 instead of late FY 1969.

The B–58s and the current Hound Dog air-launched "stand-off" missiles for the B–52s would be retained in the forces until the SCAD became available. The B–52C–Fs will be retained to provide a conventional bombing capability should that be needed sometime in the future. Finally, plans are being made to place ourselves in a position to increase promptly the number of bombers on sustained 15-minute ground alert, from the current 40 percent to 60 percent, if that should become necessary to protect our Assured Destruction capability. We also plan to provide "satellite basing" for our bomber force, as indicated earlier.

Although we are still uncertain whether a new intercontinental bomber will be needed in the 1970s, we do believe it would be prudent to keep the program moving in such a way as to reduce leadtime and protect an initial deployment date of FY 1977 or FY 1978. Accordingly, $77 million has been included in the FY 1970 budget to continue the competitive design phase initiated with FY 1969 funds, and to advance the development of the long leadtime avionics and propulsion systems. This new bomber (AMSA) would, of course, be designed to carry both the SRAM and the SCAD as well as nuclear and conventional gravity bombs.



ADVANCED MANNED STRATEGIC AIRCRAFT. We propose to continue with competitive designs for the AMSA to provide a hedge against our possible bombers requirements in the late 1970s.

Missile Forces

In overall terms the missile forces we are proposing for the FY 1970–74 period are essentially the same as those presented to the Congress last year—1,000 Minuteman, 496 Poseidon and 160 Polaris at the end of FY 1974, plus 54 Titan IIs through FY 1973. The only significant change from last year concerns the Poseidon program, the phasing of which has had to be altered to conform with Congressional action on our FY 1969 budget.

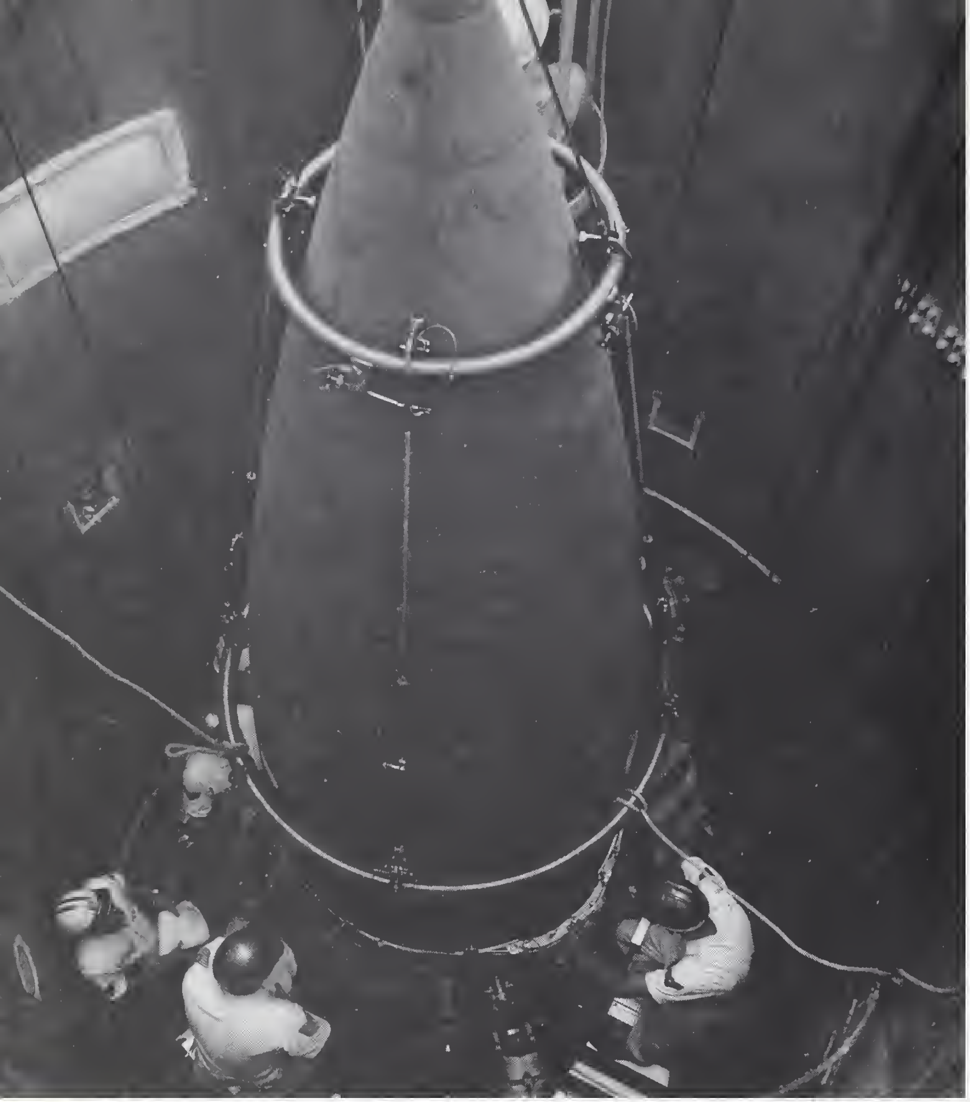
Minuteman. The Minuteman forces now proposed for the FY 1970–74 period involve only minor changes in the mix of Minuteman I, II and III. The Minuteman Is, which began to be replaced by Minuteman IIs in FY 1967, will later be replaced by Minuteman IIIs. The number of Minuteman IIs, the final buy of which was made in FY 1968, will begin a gradual decline as the missiles used for follow-on operational readiness tests are also replaced with Minuteman IIIs. Flight testing of the Minuteman III is progressing, and the first of these missiles will soon be entering the force.

We have also included funds in the FY 1970 budget to continue the development and test of a dual-purpose, super-hard silo for the Minuteman III or a new land-based ICBM.

Titan II. Although the Titan II, with its large warhead, will still be useful against undefended large soft targets, its importance will decline greatly when large numbers of Minuteman IIIs and Poseidons enter the forces. Accordingly, we believe that after FY 1973 we can safely permit the Titan force to decline as the missiles on hand continue to be used for follow-on operational reliability testing without replacement.

Polaris/Poseidon. The Poseidon refit program presented to the Congress last year entailed the conversion of 31 nuclear-powered ballistic missile submarines (SSBNs) on a schedule tied to their regular overhaul cycle. Funds for the first two conversions were provided by the Congress in FY 1968. Six more conversions were requested in the FY 1969 budget, but the Congress provided funds for only two more in the belief that the program should be slowed down until flight tests had clearly established that there were no development problems with Poseidon and its MIRV concept. . . .

Accordingly, we have developed a new schedule which retains the beginning and end dates but rephases the conversion program in the intervening years. Under the new schedule, two SSBNs are funded in FY 1968, two in FY 1969, six in FY 1970, seven in FY 1971, six in FY 1972, five in FY 1973 and three in FY 1974 this permitting completion of the program in FY 1975 as previously planned. Funds are in-



AIR FORCE MISSILE CREW mates nose cone to Minuteman III prior to test firing from silo. Any new land-based system should be deployed in super-hard silos. We are already developing super-hard silos.

cluded in the FY 1970 budget for six conversions plus advanced procurement for future conversions. . . .

New Strategic Missile Systems. Last year we informed the Congress that we had reached two main conclusions with regard to new strategic missile systems:

- That any new land-based system should be deployed in super-hard silos and perhaps defended by some sort of ABM system.
- That any new sea-based system should be designed around a longer-range missile in order to avoid having to station the launch platform within the effective operating range of an improved Soviet anti-submarine warfare (ASW) defense. Also, the submarine design should make it possible to increase time on-station substantially.

It is quite evident that if the Soviets achieve greater accuracy with their ICBMs, together with a MIRV capability, our land-based strategic missiles will become increasingly vulnerable to a first strike. Accordingly, the silos in which they are installed must be further hardened, defended with ABMs, or both. We are already developing super-hard silos; for which another $58 million is requested in the FY 1970 budget. And, we are also keeping open the option to defend these silos with ABMs.

While we do not as yet see a need for a new land-based strategic missile, we believe the advanced technology required should be developed and $20 million has been included in the FY 1970 budget for that purpose. Moreover, the super-hard silos now being developed will be designed so that they could accommodate a new, large ICBM as well as the Minuteman III.

We are also requesting $20 million in the FY 1970 budget to prepare for possible engineering development in FY 1971 of a new Undersea Long-range Missile System (ULMS). (About $5 million was provided in FY 1969 to initiate a study of such a system.)

No significant changes have been made in the other strategic offensive forces included in this program.

Strategic Defensive Forces

Bomber Defense

As noted earlier, much of the existing U.S. anti-bomber defense system can be phased out when the new AWACS, Over-The-Horizon radars and modified F–106X interceptors become available in the mid-1970s. The proposed AWACS force and the new Over-The-Horizon (backscatter) radars would replace all but two of the SAGE Centers, five of the planned 15 BUIC III Control Centers, more than half of the search radars, all of the Gap Filler and DEW Line radars, and all of the existing surveillance and warning aircraft.

The proposed F–106X force would replace all of the older type interceptors (both active and reserve), except for one squadron of 28 F–102s in Hawaii.

With regard to surface-to-air missiles, the Bomarcs will be phased out of the force as previously planned. The number of onsite Nike-Hercules will decline during FY 1969–70, and then be continued at the end FY 1970 level throughout the remainder of the program period. The Hawk force will be maintained unchanged at the current level.

The over-land radar technology program is progressing satisfactorily and the tests to date have been encouraging. Contract definition has been initiated and engineering development of the AWACS system can be started in FY 1970. About $40 million is available for this purpose in FY 1969, and an additional $75 million is requested in the FY 1970 budget. . . . If all goes well, the first of these aircraft should enter the force in the mid-1970s.

Although the Congress did not appropriate the $28 million requested in FY 1969 for the development of the modifications required for the F–106X, we believe we can still come close to achieving the original schedule, providing that at least $18.5 million is appropriated for FY 1970. The first of the modified F–106s would enter the force one year earlier than the AWACS.

The "back-scatter" Over-The-Horizon radars could become operational in the early 1970s. One million dollars is available for the development of this system in FY 1969 and $3 million more is requested for FY 1970.

Missile and Space Defense

Included under this heading are the anti-satellite and anti-ballistic missile defense systems, as well as attack warning.

Anti-Satellite Defense. As described in previous years, we have a capability to intercept and destroy hostile satellites within certain ranges. The capability will be maintained throughout the program period.

Satellite tracking and identification are provided by the SPASUR and SPACETRACK systems. . . .

Warning. For early warning of ballistic missile attack we now depend upon the Ballistic Missile Early Warning System (BMEWS), consisting of three radar sites guarding the northern approaches; and the "forward-scatter" Over-The-Horizon (OTH) radar system consisting of a number of transmitting and receiving stations at various locations. . . .

We are also requesting funds in the FY 1970 budget for the satellite "early warning" system, mentioned earlier.

ABM Defense. For active defense we are deploying the Sentinel system. . . . The system approved for deployment is essentially the same as that presented to the Congress last year.

The program is moving forward on schedule, except for some small delays which will be made up before the planned full operational date. . . .

The development of all five major components making up the Sentinel system is proceeding on schedule. The PAR, which is used for long-range surveillance, acquisition and tracking is a state-of-the-art, low frequency, phased array radar and no development prototype is deemed necessary. . . . The radar is still in the design stage.

The first MSR, which is used both for tracking the target and the defending missile, has completed factory tests and is now being tested at Kwajalein.

The Sprint missile, which is designed to attack incoming warheads after the atmosphere has helped to separate out the accompanying decoys, chaff, etc., is in the test firing state. . . .

The Spartan missile, which will be used for area defense, is in the flight test stage at Kwajalein, and these tests, too, are proceeding satisfactorily.

The fifth major component, the data processing system, is being installed at the contractor's plant and is partially operational. A second system is being installed at Kwajalein for use in the full systems tests.

For the Sentinel system, alone, we have included in the FY 1970 budget a total of about $1,788 million: $335 million for research and development; $736 million for procurement; $647 million for construction; and $70 million for operations. The FY 1969 budget provides a total of $962 million: $331 million for research and development; $346 million for procurement; $266 million for construction; and $39 million for operations. (Funds for ABM warhead development and production are included in the Atomic Energy Commission budget.)

In addition to the research and development work directly associated with the Sentinel system approved for deployment, we will continue our efforts to develop even more advanced ABM systems. These efforts are carried on primarily under the Nike-X Advanced Development Program, for which $175 million is included in the FY 1970 budget. (The $175 million figure includes about $40 million formerly carried in the Advanced Research Projects Agency (ARPA) Defender program which is concerned with the exploration of advanced technology for both missile offense and defense. For management convenience, those activities which are directly identifiable with anti-ballistic missile defense have been transferred from Defender to Nike–X Advanced Development.)

The FY 1970 budget also includes $16 million for Air Force and Navy support of the Kwajalein test program, $83 million for the support of the Kwajalein test range (which is also used for reentry tests and experiments), and $72 million for ARPA's Strategic Technology programs (most for exploratory work on offensive systems).

We have also included $3 million to continue our study of a sea-based ABM intercept system (SABMIS). Such a system would provide depth to the continental U.S. defense.

Civil Defense

The Civil Defense program proposed for FY 1970 contemplates no important change in basic objectives from those which were discussed last year. The FY 1970 request is being held at the lowest possible sustaining rate, pending the end of the Vietnam conflict.

. . . By the end of FY 1969 we will have identified 185 million spaces with a standard protection factor of 40 or more, of which 105 million will have been marked and over 95 million stocked with an average 8 days of austere supplies. Continuing survey and design assistance efforts should add about 70 million spaces to the national shelter inventory in the next five years.

Even with the large shelter inventory projected for the mid-1970s, up to one-half the population would still lack standard (PF–40) fallout shelter. This situation can be altered only by developing additional means to increase the inventory *where needed.* We are, therefore, proposing a modest test of a fallout shelter support program (for which we have included $2.5 million in the FY 1970 budget) to determine the effectiveness of small incentive payments made to owners of new building projects for the inclusion of additional fallout protection in these buildings through the use of low cost design and construction techniques.

. . . a total of $75.3 million is requested [for the Civil Defense Program] for FY 1970, . . .

General Purpose Forces

The General Purpose Forces consist of those land, sea and air units on which we rely for all military actions short of strategic nuclear war. These forces include most of the Army combat and combat support units, all of the Marine Corps units, virtually all of the Navy units (except ballistic missile submarines), and the tactical units of the Air Force. This year, for the first time, we are presenting these forces in terms of their basic mission—land, sea and air combat—instead of the traditional grouping by Service, since it is in those terms that the requirements are determined.

The Requirement for General Purpose Forces

As we have noted in previous years, the overall requirements for General Purpose Forces rest on two very fundamental policy judgments: that the security of our nation is inextricably bound up with a forward defense and, thus, with the security of our allies; and that strategic nuclear forces, in themselves, cannot be relied upon to provide a credible deterrent or a reasonable response to the entire spectrum of aggression which we must be prepared to face.

The first judgment has given rise, since the end of the Second World War, to a series of collective defense agreements with almost half the nations of the Free World. Some of these agreements clearly require us to consider an attack against an ally as an attack against ourselves; others contain commitments of a more general nature. But all of them represent, to a greater or lesser degree, contingencies for which we must provide, and these contingencies, in the aggregate, constitute the principal sources of requirements for General Purpose Forces.

The fact that we must have plans to deal with each of the contingencies does not mean that we must be prepared to deal with all of them simultaneously, but neither can our potential opponents, and that is the crux of the matter. Accordingly, we continue to design our General Purpose Forces (active and reserve) to meet simultaneously the more probable contingencies. In addition, our General Purpose Forces provide a strategic reserve sufficient to meet unforeseen emergencies.

We believe the validity of the second basic policy judgment is confirmed by our experience with armed conflicts since the end of World War II. This experience has clearly demonstrated that strategic nuclear forces cannot be relied on to deter lesser levels of conflict. Nor can they serve as a substitute for properly trained, equipped and manned General Purpose Forces in dealing with such conflicts. Accordingly, we must continue to support adequate General Purpose Forces in the future.

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Logistics Requirements

The logistics requirements for the General Purpose Forces are computed on the basis of a single standard of logistics readiness so as to ensure that our inventories of equipment, secondary items, ammunition, and other combat consumables are in proper balance with our forces and contingency war plans. The forces, for this purpose, are divided into four categories, each of which is assigned an appropriate logistics standard:

- The NATO category covers those forces which we support mainly for the defense of NATO.
- The indefinite combat category includes those forces which are maintained for use where we can predict neither the place nor the duration of combat.
- The Southeast Asia category includes the forces in combat in that theater.
- The "Other" category includes those forces which, for purposes of logistics guidance, do not fit into any of the first three categories. These forces, in general, provide the training, rotation, attrition reserves, and overhaul base for forces deployed in Southeast Asia, or are maintained against the possibility of such a need.

Land Forces

We plan to maintain through FY 1970 the 32⅔ active and reserve Division Force Equivalents (DFEs) which we have today. These forces include 19⅔ divisions in the active Army, 4 in the active Marine Corps, 8 in the Army Reserve Components, and 1 in the Marine Corps Reserve.

As noted in previous years, a Division Force Equivalent is the aggregate of:

- The Division itself (or its approximate equivalent in three independent brigades).
- An Initial Support Increment (ISI)—non-divisional units which are needed in the theater to support the division from the outset of combat.
- A Sustaining Support Increment (SSI)—follow-on non-divisional units required to sustain the division in combat indefinitely. (Marine Corps DFEs do not include SSIs since they receive their sustaining support, when required, as in Vietnam, from Army and Navy units.)

Since ISI units normally deploy with divisions, they must be maintained at the same readiness for deployment as divisions. SSI units for active divisions, however, usually deploy later and most can be maintained at lower readiness levels, with some in the Reserve Components.

Shown in Figure 1 is the planned allocation of the 32⅔ DFEs at end FY 1970, including the temporary augmentations for Southeast Asia.

Seventeen of the 23⅔ active division forces will continue to be deployed overseas leaving 6⅔ in our active Continental U.S. forces. Backing up the active forces, we will continue to have 9 DFEs (8 Army and 1 Marine Corps) in the inactive Reserve Components, along with some additional support units to round out the active forces.

Although the total number of DFEs remains the same as reported to the Congress last year, there have been several changes in deployment and composition. Within the last 12 months we increased our deployments to Southeast Asia by two-thirds of a DFE, and completed the redeployment from Europe of two brigades of the 24th Infantry Division (Mechanized) and their ISI and SSI support units (two-thirds of a DFE).

Originally, we had planned to replace the remaining brigade of the 24th Infantry in Europe with one from the United States on a six-month rotation schedule. In addition, we had planned to exercise all three brigades in Europe once each year. We have now been advised by our commanders in Europe that the "rotation" feature would not be worth the extra cost and personnel difficulties involved. Accordingly, we have decided to cancel the "rotation" feature of the plan and permanently station one brigade in Europe and two in the United States. This decision, however, will not affect the plan to maintain the two brigades in the United States under the operational command of U.S. Commander in Chief, Europe, and to exercise the complete division in Europe once every year to demonstrate its readiness.

CHEYENNE. The planned force of 375 AH-56A compound fire support helicopters will replace a variety of artillery, tank, anti-tank, and other older types of aviation units.

Army Division and Brigade Forces

While there has been no change in the Army total of 27⅔ DFEs planned for end FY 1969, there have been adjustments within that total. One of the measures made necessary by the 1968 Revenue and Expenditure Control Act was the inactivation of the new 6th Infantry Division while still in the process of formation. . . .

The active division and brigade force structure as now planned for end FY 1969 will be continued unchanged through FY 1970. However, by December 1969, all of the reservists called up in May 1968 will have been released from active duty and the units called up will then be transferred back to the Reserve Components. These units will be replaced by new units activated at that time so that the active Army force structure will remain unchanged.

The conversion of the 101st Airborne Division (currently in Vietnam) to an Airmobile Division will be completed by the end of FY 1969, as planned last year.

Army Supporting Forces

Most of the changes that have occurred during the past year within maneuver battalions, cavalry squadrons, field artillery battalions, signal battalions and construction battalions are related to the changes made in the division and brigade forces. However, there is one change of a different character which deserves special mention. Starting in late FY 1970 the new AH-56A "compound" fire support helicopter will be introduced into the forces. The planned force of 375 AH-56As will replace a variety of artillery, tank, anti-tank and other older types of aviation units on an equal cost tradeoff basis. That is (1) the forces being replaced cost as much over a 10-year period as the new AH-56 units being introduced, and (2) Army estimates that the new AH-56 units will add more combat power than that given up in the units being replaced.

Army Aviation

Since 1965 the UH-1 "Huey" helicopter has been the workhorse of our current force (*i.e.*, roughly one-half of the total helicopter inventory), but it is not an optimum system for the transport of combat units. . . . Consequently, we plan to initiate contract definition in FY 1970 for the design of a new Utility Tactical Transport Aircraft System (UTTAS). This aircraft will be able to carry about double the number of troops, plus a crew of three. We estimate that the 10-year system cost of a UTTAS-equipped helicopter force could be only a little more than half the cost of operating a UH-1 force with an equivalent lift capability over the same period of time.

Planned Allocation of DFEs at End FY 1970

	Division	ISI	SSI
Deployed			
Total	17	17	10⅔
Continental United States: Active[a]			
Total	6⅔	6⅔	2
Continental United States: Inactive			
Total	9	9	15
World-wide			
Total	32⅔	32⅔	27⅔

[a] Includes the ⅔ division force recently withdrawn from Europe in the REFORGER action, which remains under USCINCEUR operational command.

Figure 1.

Army Missile Forces

As noted last year, the difficulties encountered in the development of the fuel system of the Lance surface-to-surface missile caused us to defer a decision on the future mix of the Lance, Honest John and Sergeant forces. Now, on the basis of several successful test firings, we have decided to proceed with the Lance program and expect to begin initial deployment of the system in the early 1970s.

The Lance missile is being designed as a nuclear weapon system, although it can be readily adapted to carry a conventional warhead if desired at some future time without any modification of the propulsion unit. The deployment of this missile system will permit retirement of most of our older Sergeant and Honest John systems.

Army Air Defense

The Army has been working for some years on an improved version of the Hawk system in order to achieve a faster response time, better electronic countermeasure capability, and much greater reliability. Although the improved Hawk will be more expensive per missile deployed, it will enable us to obtain the capability we need with a smaller force, and at about the same cost. Because of these improvements and the introduction of Chaparral Vulcan, and because of a recent reevaluation of air defense needs, we now plan to reduce the permanent Hawk forces to some extent.

The Chaparral Vulcan force programmed for the FY 1970–74 period is essentially unchanged from last year, except that we now plan an equal number of Chaparral and Vulcan fire units per battalion instead of the heavier emphasis on Vulcan.

The SAM–D, a potential replacement for both the Hercules and Hawk, continues in advanced development.

Marine Corps Division Forces

Overall, there has been no change in the size of the Marine Corps Division forces during the past year. Until the Vietnam conflict is resolved, we will continue to maintain four active divisions and one reserve division. Thereafter, the Marine Corps will return to the pre-Vietnam force structure of three active and one reserve divisions. However, certain additional combat support units will be provided.

Moreover, we have decided to increase the range of Marine Corps artillery by converting the five active and two reserve 155mm gun batteries now in the force to the 175mm gun. The three batteries in Vietnam will be equipped with 175s on loan from the Army by the end of FY 1969. In FY 1970 we plan to procure a sufficient number of these weapons to equip the seven existing batteries plus one new battery which will be added in FY 1971.

Marine Corps Helicopters

Last year we planned to build up to four medium CH–46 squadrons (21 unit equipment each) and two heavy CH–53 squadrons (24 unit equipment each) in each of the three active Marine Corps wings. In addition, the reserve wing was to be equipped with five medium squadrons of the older UH–34s and one squadron of CH–53s. We now believe this would be more than we need and that it would be better to equip all four wings identically, with a reduced number of squadrons in each wing. These changes reduce the required unit equipment for the helicopter force and will save $70 million in investment costs and $40 million in annual operating costs.

To meet the new force objectives, which will become effective with the end of the conflict in Vietnam, we have increased the procurement and accelerated the deliveries of the CH–53s budgeted in prior years, so as to have six active squadrons, instead of the four active and one reserve squadrons planned last year. All of the UH–34s will be phased out of the forces, first from the active and then from the reserve.

In addition to the medium and heavy helicopters, each wing (active and reserve) will have one mixed light observation squadron.

LANCE SURFACE-TO-SURFACE MISSILE. **Initial deployment is expected in the early 1970s. The Lance missile is being designed as a nuclear weapon system, although it can be readily adapted to carry a conventional warhead.**

Army Procurement

The FY 1970 Army aircraft procurement program provides for attrition and the continued modernization of the U.S. Army aviation units. To meet these needs, we plan to procure about 1,000 aircraft in the coming fiscal year. Included in the FY 1970 program is the first large procurement of the AH–56A fire support "compound" helicopter. The first 15 aircraft are being bought in FY 1969 as part of a "total package" contract calling for the procurement of 375 AH–56As over a three-year period.

Last year we planned to equip selected M–60 tank units with a mix of 105mm gun and Shillelagh missile/152mm gun systems. In addition, we planned to equip certain armored units with the M–551 Sheridan armored reconnaissance vehicle, which is also armed with the Shillelagh missile/152mm gun system.

However, as a result of some new technical problems encountered in the Shillelagh/152mm gun turret on the M–60 tank, we have had to modify that program. . . . We now plan to shift our production efforts in FY 1969 and FY 1970 to the 105mm gun M–60. Accordingly, some of the Shillelagh-equipped M–60s included in the FY 1969 procurement program, plus some M–60 chassis which were to be used for other vehicles, will now be configured with the 105mm gun. In FY 1970, we will buy only the 105mm gun M–60s, plus a number of armored vehicle-launched bridges and combat engineer vehicles which use the M–60 chassis. The planned FY 1970 procurements will permit us to maintain the M–60 chassis production line at the minimum sustaining rate.

Aside from the delayed phase-in of the Shillelagh-equipped M–60, the major consequences of the adjustments made in this program will be to increase the number of 105mm gun M–60s in the force over the level previously planned.

The Sheridan armored reconnaissance vehicle has not been affected by the M–60 turret problem since it has a different Shillelagh missile/152mm gun turret. We will continue to buy the Sheridan at the sustaining production rate in FY 1970.

The Main Battle Tank (MBT–70) Program continues to present development problems, making it impossible at this time to fix an initial procurement date. A reassessment of the program is currently under way. Accordingly, we have included in the FY 1970 budget only those funds required to continue research and development and to proceed with limited amount of advanced production engineering.

With respect to anti-tank missiles, funds are included in the FY 1970 budget for the procurement of a large number of TOW missiles, a heavy wire-guided anti-tank weapon which can be used both from ground mounts and by the new AH–56A fire support helicopter. The initial procurement of the new man-carried Dragon medium anti-tank missile has been deferred, pending the results of further testing. The development problems being encountered with Dragon, however, are not considered to be very serious and we fully expect it to perform as designed.

A–7D TACTICAL ATTACK aircraft for close support and other fighter/attack missions. In FY 1970, we propose to buy the first large quantity of A–7s for the Air Force and procurement will continue through 1973.

Tactical Air Forces

For the coming fiscal year we are proposing a total force of about 8,800 aircraft in the General Purpose Tactical Air Forces. The permanent force planned for FY 1974 will be somewhat smaller, but will have a significantly greater payload capacity and a markedly improved reconnaissance and electronic warfare capability.

Active Fighter/Attack Forces

The program proposed for FY 1970–74 provides a total of about 5,000 active fighter/attack aircraft through the duration of the Vietnam conflict and a somewhat smaller permanent force thereafter.

Air Force. As we noted last year, our long-term objective for the fighter/attack force is a balanced capability to meet the full spectrum of foreseeable mission requirements. To provide such a capability we planned a permanent force of 23 wings, consisting of a mix of A–7, F–4, and F–111 aircraft. During the past year we have reassessed the composition of this force and concluded that relatively more emphasis should be given to the close support mission and less to deep interdiction. Accordingly, we now propose a 23-wing force with a mix reflecting an increase in A–7s and F–4s, and a decrease in F–111s.

The F–111 is the only tactical Air Force aircraft with an all-weather, night-time radar bombing system and is extremely well suited for the deep interdiction mission. But it is also less versatile and agile than the F–4, and it costs considerably more than the A–7 which has almost the same payload capability in the close support role. Consequently, we now believe that the F–111 should be procured primarily for the deep interdiction role, and that for close support and other fighter/attack missions we should rely primarily on the F–4 and A–7. In this way, we can achieve a better balanced and more versatile force at a considerably lower cost.

To offset the slower phase-in of the F–111, made necessary by the Congressional mandate to reduce FY 1969 expenditures, we decided last year to buy some additional F–4s. At the same time, we reduced the planned FY 1968–69 procurement of Air Force A–7s in order to avoid peaking the production rate during the period of rapid buildup of the Navy's A–7 forces, and to help meet our FY 1969 expenditure reduction goal. (The reprogramming requests involved have been approved by the Armed Services and Appropriations Committees.) In FY 1970, when Navy procurement declines, we propose to buy the first large quantity of A–7s for the Air Force, and procurement will continue through 1973. Since our F–4 losses in Southeast Asia are lower than projected as a result of the bombing halt in North Vietnam, the F–4s procured in FY 1969 will meet our needs through December 1971, the normal leadtime for FY 1970 procurement. Accordingly, no F–4s will be procured for the Air Force in FY 1970. However, delivery of F–4s procured in FY 1969 will be stretched through December 1971 so that procurement can be resumed in FY 1971 with no gap in the production line.

The first squadrons of A–7s will enter the Air Force inventory in FY 1971 and the buildup to the approved force goal will be completed in FY 1974. The buildup of the F–4 force will be completed in FY 1970, and all subsequent procurement will be for attrition.

Two years ago we began the procurement of the A–37B (an attack version of the T–37 [now combat proved]) for the Special Operations Forces in Vietnam. . . . In order to provide the required aircraft, we increased the FY 1968 and FY 1969 buys, and included funds for additional A–37Bs in the FY 1970 budget.

The four F–102 squadrons (three in Pacific and one in Iceland) were scheduled to phase out at the end of FY 1970. However, we now plan to maintain this force through FY 1971, at which time the squadrons in the Pacific will be replaced with F–4s, leaving only the Iceland-based F–102 squadron in the active forces through the program period.

The F–105s will also be retained in the active force longer than planned last year. A lower-than-expected attrition rate will permit us to maintain an additional squadron through FY 1971. In FY 1972 the unit equipment aircraft per squadron will be increased thereby reducing the number of squadrons by two. We presently plan to retain several of these squadrons through FY 1973 to help offset the slower-than-planned phase-in of the A–7.

The 10 Air National Guard squadrons (two F–86 and eight F–100) called up in early 1968 have been or will be returned to reserve status before the end of the current fiscal year. However, we now propose to phase out the remaining 21 active F–100 squadrons at a considerably slower rate than previously planned.

Navy and Marine Corps

Except for the cancellations of the F–111B and the substitution of the VFX–1 (now designated the F–14A), the Navy fighter/attack forces proposed for the FY 1970–74 period are essentially unchanged from last year. We plan to operate approximately 1,650 aircraft with 16 attack carriers (including one CVS serving as a CVA) through the end of the Vietnam conflict. Thereafter, the active forces will be reduced to about 1,350 aircraft and 15 attack carriers.

In order to assist in solving our FY 1969 expenditure problem, we stretched out somewhat the Navy's A–7 production program. We expect to be back on the original schedule by the mid-1970s, when all of the remaining A–4s will be phased out of the active carrier forces. There has been no change in the Navy A–6 force.

Another more important change in the program since last year has been the cancellation of the F–111B and the substitution of the F–14A. Assuming that everything goes according to plan, we would have our first F–14A squadrons in the force by end FY 1973, some two years later than planned for the F–111B.

In order to offset this change in phasing between the F–111B and the F–14A, we propose to retain in the active forces throughout the FY 1971–73 period several more F–4 squadrons than previously planned. A sufficient number of F–8 squadrons will be retained in the force to provide two for each Hancock (Essex)

A–4 FOR THE MARINE CORPS. These aircraft will be equipped with a higher thrust engine and a laser device for improved target acquisition and bombing accuracy.

CVA, since these carriers cannot effectively operate the F–4s.

The Marine Corps active fighter/attack forces are organized in three wings (each with A–4, A–6 and F–4 squadrons) totaling about 600 aircraft, and will be continued through FY 1974. This is the same program presented last year.

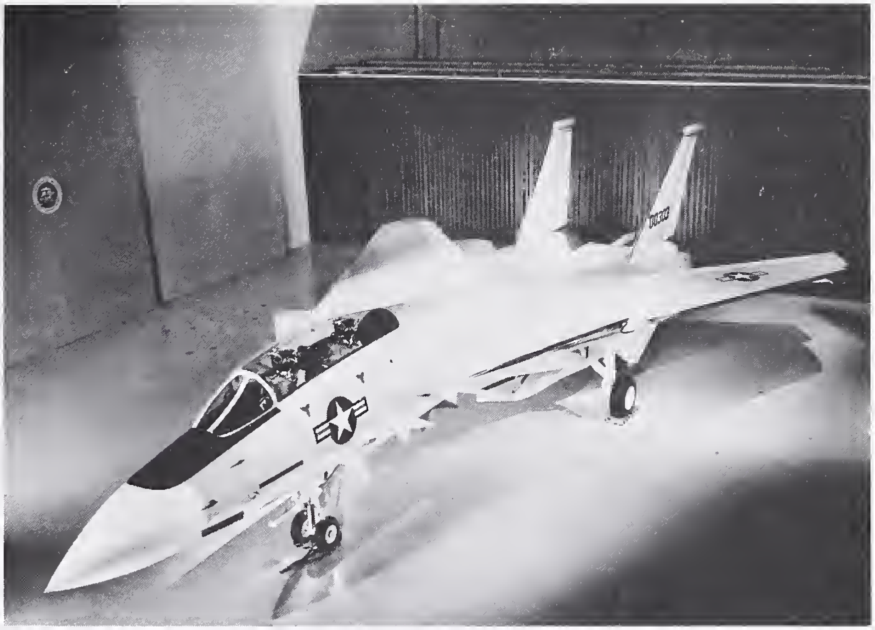
The stretch-out of the Navy A–7 production program, plus the fact that attrition in Southeast Asia is running below the estimate made last year, has enabled us to reduce the original FY 1969 procurement program and to request fewer aircraft than previously planned in the FY 1970 budget. As a result of the stretch-out, however, procurement of A–7s in FY 1971–73 will be higher than planned last year, since some of the aircraft deleted from the FY 1969–70 programs will have to be added to the end of the production run.

We also plan to continue procurement of A–4s for the Marine Corps in FY 1970. These aircraft will be equipped with a higher thrust engine and a laser device for improved target acquisition and bombing accuracy. As indicated last year, we plan to equip the Marines with A–4 aircraft throughout the 1970s . . .

Because we now plan to retain more F–4 squadrons in the Navy, we will have to buy additional aircraft in FY 1970 and continue procurement in subsequent years, instead of making the last buy in FY 1970 as previously planned. Additional A–6s will be procured in FY 1970 and FY 1971 to provide for Navy and Marine Corps normal attrition.

Development of New Fighter/Attack Aircraft

The Navy's new fighter, the F–14, is being designed as an air superiority general purpose fighter, including fleet and area defense. It will fulfill the intended F–111B mission and, eventually, may replace all the F–4s. Designed for high performance, the F–14 will be effective against bombers, other fighters, and anti-ship cruise missiles. By using already developed engines, avionics and air-to-air missiles, the initial F–14, designated the F–14A, should be able to enter the fleet in early 1973. It will provide improved fighter performance and much improved fleet air defense.



NAVY GENERAL PURPOSE FIGHTER. The F–14 is being designed as an air superiority general purpose fighter, including fleet and area defense. It should be able to enter the fleet in early 1973.

When the advanced technology engine of higher thrust but lower weight (currently under joint Navy-Air Force development) becomes available, the Navy version of the engine could go into the second model of the series, which would then be designated the F–14B. A third model of the F–14 series, the F–14C, would incorporate the F–14B's advanced technology engine and an advanced avionics suit, plus the best weapons available for a general purpose fighter. As such, it is expected that this fighter will equal or surpass the best Soviet fighters of the same era.

Contract definition is proceeding on schedule, and development work on the engine and avionics, as well as the Phoenix missile, is continuing. A total of $130 million ($30 million for contract definition, $18 million for the engine, $22 million for the avionics, and $60 million for the airframe) was provided by the Congress last year with the understanding that engineering development of the airframe would not be initiated until 15 days after the Appropriations Committees of both Houses had been notified of the cost and design characteristics of the aircraft selected. A total of $414 million has been included in the FY 1970 budget for the F–14A to continue development and to buy pre-production aircraft for test and evaluation. The buildup to the planned force level needed to fulfill the fleet air defense needs would be completed by the mid-1970s.

In addition to the F–14, we also have under development a new fighter, the F–15 (formerly designated the F–X), for the Air Force. The F–15 is optimized for air-to-air combat with enemy fighters. Its performance will be significantly better than the present F–4E, and it will also be superior to any present or postulated fighter in both close-in visual and long-range missile encounters. The F–15 will have one pilot and twin engines. The engine, as mentioned earlier, is currently under development and utilizes new technology to provide a major increase in thrust relative to weight. The F–15 will be equipped with our most advanced weapons, and combined with good sensors and airframe maneuverability, it will provide a major advance in fighter aircraft.

Based on the current development schedule, the F–15 could be introduced into the Air Force in 1975. To fund this program, $45 million is provided in FY 1969 and $175 million is requested in the FY 1970 budget.

The new Navy and Air Force fighters have a somewhat different design and mission. While the F–15 is optimized for air combat with enemy fighters, the Navy F–14A is designed for air superiority and the fleet air defense role for which it will employ the long-range Phoenix missile. This difference in design makes the F–14A somewhat heavier and more expensive than the F–15, but both will be extremely capable fighter aircraft.

In line with our decision to place more emphasis on the close support mission, we have also included in the FY 1970 research, development test and evaluation budget $12 million for contract definition of a new Air Force attack aircraft designated the AX. We are tentatively planning on a small, twin engine turbo-prop STOL aircraft armed with a new high velocity 25–35mm gun, as well as a wide variety of bombs and rockets. The performance characteristics would emphasize flexibility and maneuverability in flight combined with a good loiter capability.

Reserve Fighter/Attack Forces

In addition to the approximately 5,000 fighter/attack aircraft in the active forces, we now have about 900 in the reserve forces.

Air National Guard. Last year we planned to maintain 23 squadrons of fighter/attack aircraft in the Air National Guard, with 25 unit equipment each. We now plan to convert this force to 24 squadrons with 24 unit equipment each. The 13 squadrons in the force at end FY 1968 simply reflect the fact that 10 squadrons were then on active duty. When the conflict in Vietnam ends we will be in a position to undertake a major modernization of the Guard aircraft inventory. The old F–84s and F–86s will be phased out and replaced with A–37s and additional F–100s. In FY 1974 when the last squadrons of A–7s are delivered to the active force, the remaining F–105 squadrons will be transferred to the Guard. At that time the Guard will have a total of about 630 aircraft, compared with the approximately 565 programmed for end FY 1969.

Navy and Marine Corps. The Navy/Marine Corps Reserve now consists of 20 squadrons with about 355 aircraft (A–4s and F–8s). When the conflict in Vietnam is concluded, several squadrons of A–4s will be replaced by four F–4s. This change will provide a better balance of fighter and attack aircraft in the reserve force. At that point the Navy/Marine Corps Reserve will have 330 aircraft.

Reconnaissance Aircraft

For the reconnaissance mission we plan to maintain the current level of about 800 aircraft for the duration of the Vietnam conflict. Thereafter, the force will be reduced to a somewhat lower level. (The three Air National Guard RF–101 squadrons called to active duty in January 1968 will be returned to reserve status by end FY 1969.)

The major change in the active Air Force from last year is the deferral of the initial procurement of the RF–111D. This aircraft is expected to have twice the range of the RF–4 and should be able to carry a full set of day and night sensors simultaneously. Because of the high unit cost of the RF–111D, however, we have not entirely precluded the use of the RF–4 (with in-flight refueling) for the deep interdiction reconnaissance mission. We will have an opportunity to review this matter before the first RF–111 procurement is actually made.

Although the RF–4 program remains unchanged from last year, we have stretched out the procurement schedule in order to reduce FY 1969 expenditures. The FY 1969 buy was reduced and instead of buying the last increment in FY 1970, we will stretch out procurement through FY 1971.

The Navy reconnaissance program is the same as that presented last year. Additional RA–5s will be procured in FY 1970 to maintain that force at the planned level through FY 1974. The RA–3s will be phased out in the next few years.

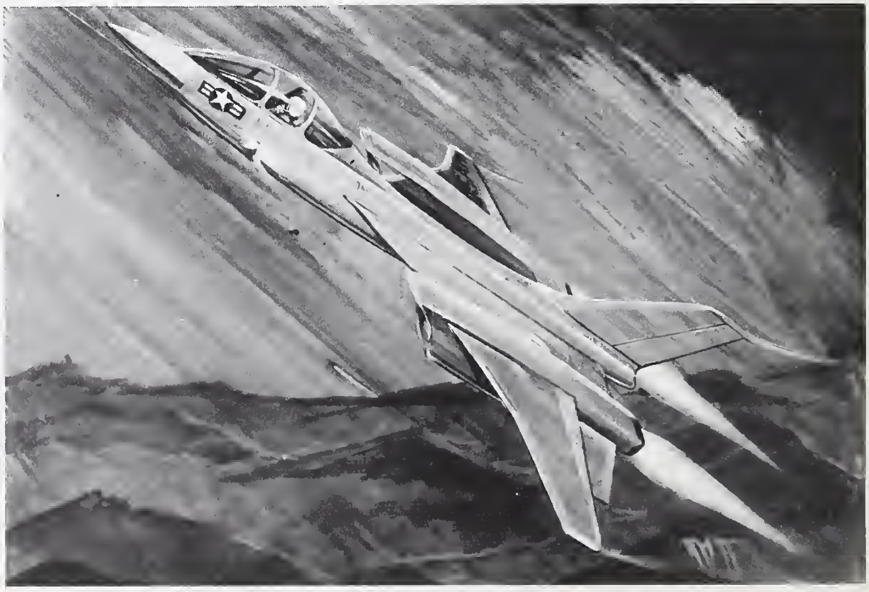
The Marine Corps force of RF–4s will be maintained at the current level through the program period.

Most of the reserve reconnaissance aircraft are assigned to the Air National Guard where some 200 aircraft are organized in 12 squadrons. As additional RF–101s become available from the active forces and through conversion of F–101s, the number of RF–84s in the Guard will be reduced. By end FY 1974 the Guard reconnaissance force will consist of seven squadrons of RF–101s, three RF–84s and two RB–57s.

Other Aircraft

In addition to the fighter/attack and reconnaissance types, the tactical air forces now include about 2,000 "Other" aircraft—special operations, electronic and night warfare, tactical air control, airborne early warning, etc. The Special Operations Forces (SOF) and Tactical Air Control (TAC) forces account for about 70 percent of the total. When the Vietnam conflict ends, this "Other" category will be reduced.

OPTIMIZED FOR AIR-TO-AIR COMBAT. Under development, the F–15 will be superior to any present or postulated fighter in both close-in visual and long-range missile encounters.



NAVY RECONNAISSANCE AIRCRAFT. Additional RA-5s will be procured in FY 1970

Special Operations Forces. At end FY 1969, the SOF will have well over a dozen different types of aircraft. With the end of the Vietnam conflict, the active force will be reduced in numbers and will have only five types—A-37, C-123, C-130, UH-1, U-10. The SOF complement in the Air National Guard will be continued as presently constituted.

Tactical Air Control. With the end of the Vietnam conflict the Air Force tactical air control forces will be reduced to about one-half of its present aircraft strength. Included in the active force will be OV-10s, O-2As and helicopters.

In FY 1971 the TA-4s in the Marine Corps tactical air control units will be replaced with the O-2 which is much less expensive to operate.

The production of O-2As has been greatly increased in the last year. The FY 1968 buy was increased from 92 to 253, and we are buying 69 more in FY 1969. Funds are included in the FY 1970 budget for the procurement of the final increment of these aircraft for the Air Force and the Marines.

Electronic Warfare. The principal issue in this area for the last several years has concerned the development and procurement of the EA-6B. As noted last year, the cost of this aircraft has risen throughout the development period and the delivery date has been repeatedly slipped. Now, however, the project has reached a stage where we can start production. The FY 1970 budget includes $248 million for the procurement of the first increment of operational aircraft; the remaining aircraft are tentatively scheduled for procurement in FY 1971 This is the same program planned last year.

Miscellaneous. The most important change in this category concerns the reequipping of the Navy tanker force. We now propose to replace the present force of KA-3s, which are nearing the end of their useful life, with the KA-6D. . . . The FY 1970 budget includes $58 million for the first increment of operational aircraft. The remaining aircraft will be procured in FY 1971-72.

Sea Forces

Included under this heading are all of the Navy General Purpose Forces, except tactical aircraft which were discussed in the preceding section (together with those of the Air Force and Marine Corps). The major issues involved in this program concern the anti-submarine warfare forces, the amphibious assault fleet, and the mix of nuclear and conventionally-powered escorts for the four planned nuclear-powered attack carriers.

Attack Carrier Forces

Despite a temporary augmentation for the duration of the Vietnam conflict, our long-range goal of 15 attack carriers (CVAs) remains unchanged. We now plan to maintain the current force level, 15 active attack carriers plus one anti-submarine carrier (CVS) temporarily serving in the Pacific as a CVA, through FY 1970. At the end of that fiscal year, the force will consist of one nuclear-powered carrier (CVAN), the Enterprise; eight conventionally-powered Forrestal-class carriers (including the John F. Kennedy); three Midway-class carriers; three Hancock (Essex)-class carriers; and the Shangri-La, which will become a CVS at the end of the Vietnam conflict. (The Midway is expected to finish its lengthy modernization and conversion and rejoin the fleet in FY 1970, releasing one of the Hancock (Essex)-class carriers for the CVS force.)

As noted last year, the CVA force at the end of FY 1976 will consist of four nuclear-powered CVANs, eight conventionally-powered Forrestal-class CVAs and three Midway-class CVAs. All of the old Hancock (Essex)-class World War II vintage carriers will then have been trans-

NUCLEAR-POWERED CARRIER Chester W. Nimitz (CVAN–68) is scheduled to join the fleet in FY 1972. The FY 1970 budget includes $377 million to complete funding of the third nuclear-powered carrier, CVAN–69.

ferred from the CVA to the CVS force.

The nuclear-powered Chester W. Nimitz (CVAN–68) is scheduled to join the fleet in FY 1972. It will cost $536 million, about twice as much as the conventionally-powered John F. Kennedy which cost $277 million. The FY 1970 budget includes $377 million to complete the funding of the third nuclear-powered carrier (CVAN–69). Together with the $51 million provided for FY 1967–68 and $82 million for FY 1969, the total cost of this ship is now estimated at $510 million, $26 million less than the Nimitz. This difference in cost reflects the fact that CVAN–69 is being built on the same contract and design plans as the Nimitz. CVAN–69 should enter the fleet sometime in FY 1974. The fourth nuclear-powered carrier (CVAN–70), which will also be identical to the Nimitz, will be funded in FY 1971.

Last year we planned to start the modernization of the Franklin D. Roosevelt in FY 1970. However, the modernization of her sister ship, the Midway, is taking so much longer and is costing so much more than originally estimated (24 months and $88 million vs. 48 months and $178 million) that we have now decided not to modernize the Roosevelt. Since the FDR will complete an austere overhaul by June 30, 1969, which will enable it to handle the new A–6s and A–7s, the need for a complete modernization has been partially alleviated.

Anti-Submarine Warfare (ASW) Forces

The ASW forces include both ships and aircraft.

ASW Carriers. The present CVS force, as we have pointed out in past years, is costly to operate in relationship to its effectiveness, particularly against the newer Soviet nuclear-powered submarines. If the CVS force is to be retained through the 1970s' its capability to detect, locate and destroy hostile submarines must be considerably improved. It was for this reason that we decided last year to go ahead with the development of a new ASW aircraft, the VSX, and eventually to modernize the existing carriers. One of the unique purposes a CVS force can serve is to provide a capability to extend ASW air operations rapidly into areas which cannot now be covered by the land-based P–3s. It would also provide a hedge against the possible loss of our present ASW air bases in Europe and Asia.

Last year we planned to phase down the CVS fleet to five ships and four air groups at the conclusion of the Vietnam conflict. However, in view of the accumulating evidence that the Soviets are improving their submarine forces, we now plan to maintain a force level somewhat higher than this through the FY 1970–74 period. One CVS will continue to operate as a CVA, returning to its ASW role after the conflict in Southeast Asia is terminated. We plan to modernize two of the existing CVSs (one in FY 1972 and one in FY 1974) and to replace three of them with Hancock (Essex)-class carriers as they are phased out of the CVA force.

The VSX development program is proceeding on schedule. Contract definition was initiated last August and completed in December 1968. The Navy should be ready to contract for engineering development in February or March 1969. The first flight is scheduled in the early 1970s and the initial increment of operational aircraft should be delivered to the fleet sometime thereafter. Funds have been included in the FY 1970 budget for the first year of full-scale development.

Procurement of the VSX is scheduled to begin in the early 1970s and continue for several years. Each CVS will eventually carry the VSX. In the meantime the S-2 force is being phased down in balance with the reduction of CVSs. When the first VSX squadrons are delivered, the S-2 force will be reduced accordingly.

In addition to the VSX, each CVS will continue to carry a complement of ASW helicopters, A-4s for a limited intercept and air defense capability, and E-1s for the airborne warning and control mission.

Patrol Aircraft. Last year we planned to phase down the patrol aircraft force as the more effective P-3C land-based and VSX carrier-based ASW aircraft became available. However, in view of the expected growth in the Soviet submarine threat, we now plan to maintain the force at a higher level and buy enough additional P-3s to complete the equipping of the entire force. To do so, we will have to buy additional aircraft beyond the number previously programmed. Included in the FY 1970 budget is $237 million for a substantial number of complete aircraft and long leadtime items for an additional quantity to be procured in FY 1971.

When this force modernization is completed, a sizable proportion of these squadrons will be equipped with the newer P-3Cs and the balance with P-3A/Bs. The P-3C will have the more capable A-NEW avionics system which will provide much faster, automated processing of information received from the aircraft's radar and sonobuoys. All of the P-3s, however, will be capable of using the DIFAR sonobuoy now under development, as well as the new MK-46 torpedo.

Attack Submarines. The attack submarine force presented last year included 60 "first line" SSNs. A total of 66 SSNs had been funded through FY 1968, of which one had been lost (Thresher) and nine were no longer considered "first line" (although they could be used for other purposes), leaving 56 SSNs available for the "first line" mission. On this basis, only four more SSNs were considered necessary; two were programmed in FY 1969 and two in FY 1970. (Another "first line" SSN (Scorpion) was lost last May.)

Now, in the light of the anticipated increase in the Soviet submarine threat, we believe that our SSN force goal must be reassessed both quantitatively and qualitatively. More and better attack submarines may be required in the mid- and late 1970s than we had previously thought necessary. Moreover, the only practical way we now see to preserve our design and production capabilities is to continue to build some new submarines and to introduce advanced types periodically.

PATROL AIRCRAFT. In view of the expected growth in the Soviet submarine threat, we now plan to buy enough additional P-3s to complete equipping of the entire force.

Accordingly, we now propose to start during the program period a substantial number of new type attack submarines. Some will be of a new design emphasizing speed, and others of a new design to be based on Navy studies aimed at producing an optimum set of characteristics, including speed and quietness. Both are highly desirable characteristics in attack submarines, but they are to some extent mutually exclusive, and must be traded off in any given design. Very quiet and very fast submarines can, however, make useful contributions to an operating force, and that is the concept underlying our decision to build different types of attack submarines.

As tentatively scheduled, the first three "high speed" (SSN-688-class) submarines would be started in FY 1970 at an estimated cost of $536 million. Several more would be started in FY 1971 and the remainder in FY 1972. By that time, the new design ("CONFORM") submarine should be ready for construction.

Work on the Turbine Electric-Drive Submarine (TEDS), funded in the FY 1968 program, is going forward as planned, but its estimated cost has risen from about $100 million to about $152 million, and it may go as high as $200 million. Nevertheless, we believe TEDS will be worth its cost since it will provide us unique and valuable operational and test experience with this new type of propulsion plant and other important quieting features considerably earlier than could otherwise be achieved.

Because of the loss of the Scorpion, the retirement of the Triton (an older SSN), and the expected delay in the delivery of one new SSN, the nuclear-powered attack submarine force at end FY 1969 will number 41 instead of 44. And, because of the need to reduce FY 1969 expenditures, we chose not to retain three additional conventional submarines. Accordingly, the attack submarine force at end FY 1969 will number 102 instead of the previously planned 105. By end FY 1970, we expect the force to be back up to the 105 level (47 nuclear, 58 conventional), and we plan to keep it there by retaining a sufficient number of conventionally-powered submarines through the program period.

Escort Ships. Last year we presented a comprehensive analysis of our escort requirement for the late 1970s. Except for the increase of eight ships (four with anti-air warfare (AAW)/ASW and four with ASW only) necessitated by the retention of one more CVS, the overall requirement remains the same—231 plus 8, or a new total of 239.

In the intervening year, however, the estimated cost of the shipbuilding program (68 new ships) proposed to meet this requirement has risen from about $3 billion to around $5 billion. The estimated cost of the DX program proposed last year has grown from $1,364 million to $2,270 million, the DXG from $1,154 million to $2,032 million, and the DXGN from about $500 million to $768 million. Much of this increase in estimated cost is basically the result of two factors—a continuing rise in the price of labor and materials and more realistic estimates based on later contract information.

In view of these cost increases we have had to review our original plan for meeting the escort ship requirement. As a result, we now propose to reduce the DX program, pending an evaluation of actual ship capabilities and costs. However, we will have to increase the DXG program in order to provide four more AAW-capable ships for the additional CVS. Thus, the revised shipbuilding program will total 62 ships.

In addition, we have had to reduce the FY 1968 DE construction program from four to one (it had originally been 10 ships) in order to finance cost overruns on the two FY 1968 SSNs and to comply with the Congressional mandate to reduce FY 1969 expenditures. The net result of these changes in requirements and in the shipbuilding program is that we will have to retain in the force 17 more of the older escorts than we had previously planned.

We have again examined the mix of nuclear-powered and conventionally-powered escorts for the four planned CVANs and have reached the same conclusion as last year, namely, that we should provide nuclear-powered escorts for only two of the CVANs. This would require a total of nine nuclear escorts (eight in operation, one in overhaul), five of which have been funded. If we were to provide nuclear escorts for the third and fourth CVANs, we would have to increase the inventory of nuclear escorts by seven and decrease the inventory of conventional escorts by nine. The manner in which these changes are calculated is shown in Figure 2.

Total CVA/CVAN Escorts Required

Carrier Task Groups		Carrier Escorts (AAW/ASW)		
Option	On Line (80 percent of Carrier Inventory)	On Line (85 percent of Inventory)	Inventory	Change in Inventory
Two All-Nuclear				
Nuclear	2	8	9	—
Conventional [a]	10	60	70	—
Total	12			
Four All-Nuclear				
Nuclear	3.2 [b]	12.8	16 [c]	+7
Conventional	8.8	52.8	61	−9
Total	12			

[a] Conventional escorts with CVA or CVAN.

[b] Four CVANs, with a 20 percent overhaul factor, provide three on line 80 percent of the time, and four on line 20 percent of the time. For purposes of computation, this is expressed as 3.2 CVANs on line. This same shorthand device is used for escorts on line.

[c] An average of 15 nuclear escorts is required in inventory. However, for the 20 percent of the time that four CVANs are on line, 16 will be needed. Buying the sixteenth nuclear escort will provide, on the average, one excess missile ship, which reduces the DXGs needed from 31 to 30.

Figure 2.

The seven additional nuclear escorts required to equip four (rather than two) all-nuclear task groups would cost about $1.6 billion to build and operate for 10 years. These would replace nine conventional ships with a comparable 10-year systems cost of $1.1 billion. The difference of $500 million in favor of conventional escorts would be partially offset by about $75–$80 million in logistics savings, leaving a net additional cost for the third and fourth all-nuclear carrier task groups of about $420–$425 million. There are also a number of hard-to-measure operational advantages to nuclear power, but these do not appear to be worth the more than $400 million involved. Accordingly, we do not believe it would be wise to commit ourselves at this time to more than two nuclear-powered carrier task groups.

The number of ASW escorts will drop in FY 1969, reflecting the earlier than planned phase-out of older ships necessitated by the expenditure reduction program.

The proposed escort shipbuilding program is spread over a period of six years, FY 1970–75. Inasmuch as the funds requested for five DXs in FY 1969 were denied (except for $25 million for long leadtime procurement), we have rescheduled the program. The FY 1970 budget now includes $335 million for the first five ships and advance procurement for the next eight.

The funds requested in FY 1969 for contract definition of the DXG were also denied on the grounds that this ship would not be ready for contract definition in that year. We expect to commence DXG contract definition in FY 1970, funds for which have now been included in the FY 1970 budget. Construction of the first increment of DXGs would start in FY 1971, followed by additional ships in each year through FY 1975.

The DXGNs are now programmed one a year, FY 1972–73. The first ship is expected to cost $222 million, and the follow-on ships an average of $180–$190 million. Advance procurement funds in the amount of $52 million were made available in FY 1969 for the first two ships. The FY 1970 budget includes $196 million to complete funding of the first DXGN and $68 million for advance procurement for additional ships. (The $68 million will complete the funding of nuclear components for all four DXGNs and fire control systems for the first three, thus permitting us to meet the delivery schedules contemplated last year.)

The missile ship modernization program is the same as that described a year ago. Two DLG–6–class ships are to be modernized in FY 1970, at a cost of $72 million, and five more are scheduled for the FY 1971–73 period. One DLG–16–class ship is to be modernized in FY 1970, at a cost of $33 million, and two more are planned in FY 1971. The FY 1970 budget includes $70 million for the three conversions ($35 million was provided for advance procurement in FY 1969) and $49 million for long leadtime items for the ships to be converted in FY 1971.

The five DD–931/945 conversions previously scheduled for FY 1970–1971 have been cancelled. The estimated cost of converting these ships has risen substantially since they were originally programmed, and the increased capability is not worth the added cost. The eight conversions of this ship class which were authorized and funded in FY 1967 and FY 1968 will be completed as planned.

Funds are included in FY 1970 to continue the installation of the Basic Point Defense Surface Missile System (BPDSMS) in a variety of existing and new ships. Development is proceeding on an advanced version of this system with increased firepower and effectiveness.

We are also planning continued procurement in FY 1970 of the extended-range and medium-range Standard surface-to-air missiles, the new missiles which are fired by Terrier and Tartar missile escorts, respectively. A new ship air defense system, the Advanced Surface Missile System (ASMS) is now in contract definition. This system is being designed as a follow-on for Tartar and Terrier in new construction or modernized escorts.

Sonobuoys. The effectiveness of ASW aircraft is critically dependent on the availability of sensitive and accurate sonobuoys. A new sonobuoy system (DIFAR) has been developed and placed in production. The first procurement was made last year, and fleet testing and evaluation will be completed in the next fiscal year. The FY 1970 request provides for the procurement of additional DIFAR as well as Jezebel/Julie sonobuoys.

We are also requesting funds to complete development of an improved version of the SSQ–47 sonobuoy. Even more advanced acoustic sensors are under development and these should further improve our capability to detect the newer Soviet submarines.

Torpedoes. The availability of modern, fast torpedoes with sufficient acquisition range is another important determinant of the ASW capability of our aircraft, escorts and SSNs.

Production of the latest surface ship/air-launched ASW torpedo, the MK–46, is continuing. Funds are included in the FY 1970 budget for procurement of an additional quantity of these torpedoes.

Development of a new submarine-launched ASW torpedo (the MK–48–0), which will have greatly increased capability over the MK–37 which it replaces, has been underway since 1964. Although this program is still encountering technical problems, we believe the solutions are now within reach. Accordingly, we intend to procure an initial increment of operational MK–48s in the coming year with the $118 million included in the FY 1970 budget for this purpose. We are also developing another version of this torpedo, the MK–48–1 for use against surface ships. The FY 1970 budget provides for further development work on both versions of the MK–48.

Amphibious Assault, Fire Support and Mine Countermeasure Forces

The amphibious assault ship force planned last year included enough fast (20-knot) modern ships to move one Marine Expeditionary Force (MEF), *i.e.*, division/wing team, in the Pacific and one-half in the Atlantic. Older, slower ships were to be retained to provide lift for the other half of the Atlantic MEF.

In view of the importance of quick response we now feel that we would be better advised to maintain a somewhat smaller amphibious lift, but one composed entirely of fast ships. To this end, we have revised the program to provide a 20-knot lift for 1⅔ MEFs—one in the Pacific and two-thirds in the Atlantic. However, with a delay of comparatively few days, a predesignated group of amphibious ships in the Pacific would be able to join those normally deployed in the Atlantic to provide lift for a complete Marine Expeditionary Force, if one should ever be needed there. This plan would provide a somewhat smaller but faster amphibious lift than the one proposed last year, and the 10-year systems cost would be about $1 billion less.

Another important factor in the size and cost of the amphibious lift is the manner in which the ground support for the air element is to be transported. Previously, we had planned to carry the men and equipment associated with two of the three prefabricated airfields (Short Airfields for Tactical Support, known as SATS) per MEF in the amphibious ships of the Assault Echelon. We now plan to transport all three SATSs in the MSTS-controlled ships of the Assault Follow-on Echelon, which is scheduled to arrive about five days after the landing. Since the Assault Echelon must depend upon the attack carriers for close air support during the landing and while the SATSs are being installed and made operable, this arrangement would simply extend that period by about five days. The currently planned attack carrier forces are clearly adequate to meet this small additional requirement. Thus, we can save about $600 million in 10-year systems costs, without detracting from the required air support.

Amphibious Assault Ships. In view of the foregoing changes in concepts, we now plan to construct a greater number of large general purpose assault ships (LHAs) than we planned last year, and to phase out more of the older, slower amphibious ships than previously planned. (We will also have to retain in the Sealift Forces some more MSTS troop ships to move the additional SATS personnel now included in the Assault Follow-on Echelon.)

The amphibious command ship (LCC) which had been planned for FY 1970 has been cancelled. This ship would be needed only for a full MEF lift in the Atlantic as well as the Pacific. (Two LCCs are available for the Pacific MEF.) We are also deferring conversion of a second Regulus submarine for the mission of surveying assault beaches and landing reconnaissance and demolition teams, previously planned for FY 1970. Originally estimated at $22 million, the cost is now about $30 million, and we are deferring this conversion for the time being in the hope that a lower-cost solution can be found.

Contract definition on the LHA has been completed, and the Navy will soon award a multi-year contract for the development and production of the programmed ships, including the ship funded in FY 1969. It is now clear, however, that the cost of the LHA will be substantially higher than expected. A year ago we estimated that the lead ship would cost $153 million and the follow-on ships an adjusted average of $122 million. We now estimate that these costs will be about $185 million and $140 million, respectively. Consequently, we now propose to procure two ships in FY 1970 instead of the three planned a year ago. The FY 1970 budget includes $288 million for these two ships (the second and third) and long leadtime items for two more to be started in FY 1971. Of the $63 million provided in FY 1969 for advanced procurement, $32 million will be used to complete the funding of the lead ship approved last year, $17 million will be used for long leadtime items for the next two ships, and the balance of $14 million will be applied against the FY 1970 shipbuilding requirements, generally. The remaining LHAs are programmed in FY 1972–73.

In addition to the LHAs, we will still need the seven LSTs programmed last year for FY 1970. However, we now propose to start them in FY 1971.

When the new ships have been delivered, the active amphibious assault fleet will consist of all fast, modern ships. In addition, an adequate number of older ships will be kept in the Category BRAVO Reserve for rapid activation in case a capability to lift two full MEFs simultaneously is ever required.

Fire Support Ships. The fire support force now includes 8-inch gun cruisers, rocket ships, and a reactivated battleship. We also have in the escort category AAW cruisers with 6-inch guns and a large number of 5-inch gun destroyers which can be used effectively for gunfire support, as in Southeast Asia.

The Navy is currently engaged in concept formulation of a new type of ship to provide major caliber gunfire support for the amphibious assault forces. However, this new Landing Force Support Ship (LFS) will not be ready for contract definition in FY 1969, and we now tentatively plan to construct some of these ships during the FY 1971–73 period.

Mine Countermeasure Forces. The programmed mine countermeasure force is little changed from last year. The major effort begun two years ago to rehabilitate the 63 existing MSOs will continue at the same rate of 10 per year until the program is completed. The FY 1970 budget request includes $48 million for 10 MSO conversions and advance procurement for 10 more.

The $139 million provided in FY 1966–68 for the construction of 16 new MSOs is no longer available, since $43 million was reprogrammed to the DLGN program and the remaining $96 million was rescinded by the Congress in FY 1969. The 16 MSOs are still required, and we now tentatively plan to construct them in the FY 1971–73 period.

To complete the modernization of the mine countermeasure forces, we now plan to build two new helicopter-carrying mine countermeasure support ships (MCSs), one in FY 1971 and one in FY 1972. (We had previously planned to start these ships in FY 1970–71 but concept formulation is not far enough along to do so.) One of the three existing MCSs, a ship of limited capability and scheduled for retirement in FY 1973, was retired in FY 1969 as an expenditure reduction measure. When the ships programmed for FY 1971–1972 are completed, the force will consist of four MCSs (two new ones and two older ships equipped with minesweeping launches).

Logistic, Operational Support, and Direct Support Ships

A force of 217 Underway Replenishment, Fleet Support, Special Combat and Small Patrol vessels is planned at the end of FY 1969, and 222 at end FY 1970. There will be four less in FY 1969 than previously planned, since the fourth new combination oiler-ammunition ship (AOE) will not be delivered on schedule, and three older ships are being phased out early as an expenditure reduction action. By end FY 1974, the force will decline to 204 as older ships are phased out and replaced on a less than one-for-one basis and as a part of the active Underway Replenishment (UNREP) fleet is transferred to the Category "B" Reserve.

Analysis of future UNREP requirements shows that, after the conflict in Vietnam is terminated, we can reduce the number of these ships in the active fleet and still meet our contingency requirements, providing all forward bases remain available. To hedge against the possibility that some of these bases may be lost, we propose to maintain more than the calculated number of these ships in the active force, and additional ships in the Category "B" Reserve.

In the Fleet Support category, the destroyer tender (AD) previously planned for construction in FY 1970 has been deferred to FY 1971. The FY 1970 budget provides for this category only two fleet salvage tugs (ATS) at a cost of $45 million. To modernize the logistic and support ship force, we have tentatively programmed about $1.7 billion in the FY 1971–74 period for new construction.

Navy Reserve Forces

The Navy will continue to maintain a force of ASW carrier-based aircraft and helicopters in the Reserve through FY 1974, which would be more than adequate to equip the four CVSs that will be maintained in the Category "B" Reserve. A number of P–2 land-based patrol aircraft will also be maintained in the Reserve through FY 1974.

The ready Naval Reserve Training (NRT) fleet will increase from 77 ships at end FY 1969 to about 88 ships by FY 1974, including 22 MSCs and 37 ASW escorts. In addition, a large number of ships will continue to be maintained in the inactive Categories "B" and "C".

Airlift and Sealift

The Airlift and Sealift Program comprises: the Military Airlift Command's strategic airlift aircraft; the Air Force's tactical airlift aircraft assigned to the Tactical Air Command and the Unified Commands; the transport and tactical airlift aircraft in the reserve components of all the Services; certain cargo and transport aircraft of the Navy and Marine Corps; specialized transportation forces such as aeromedical airlift units and aerial port squadrons; and the troop ships, cargo ships, tankers and "Forward Floating Depot" ships operated by the Military Sea Transportation Service. These forces, when augmented with the resources of commercial air and sealift in emergencies, combine to provide the total lift needed to meet defense requirements.

Requirements for Strategic and Tactical Lift

A year ago we presented a comprehensive analysis of the requirements for strategic airlift and sealift to move men and equipment overseas, and for tactical airlift to support operations in the combat theater.

As noted in the preceding section of this statement, our General Purpose Forces are sized to meet simultaneously the more probable contingencies. Our strategic lift forces are designed to provide the capability to move the required forces rapidly. Last year we found that the rapid response capability needed could be provided at least cost by a force consisting of: 6 C–5A squadrons, 14 C–141 squadrons and 30 Fast Deployment Logistic (FDL) ships; prepositioned materiel in Europe and in the Pacific and selected non-divisional support units; a Civil Reserve Air Fleet (CRAF) equal to 465 B–707/DC–8s; and the equivalent of 460 "notional" commercial cargo ships.

While our estimate of the strategic lift requirement has not changed during the past year, two major problems have arisen which have caused us to reexamine the composition of the force. First, it is now clear that the C–5A will cost us considerably more than previously estimated, and we may have to reconsider the ultimate size of that force. Second, our inability to date to win Congressional support for the proposed FDL program has forced us to examine alternative approaches, since our sealift capability is now lagging seriously behind our improved airlift capability. Both of these issues are discussed in greater detail later in this section of the statement.

Our analysis of the tactical airlift requirement is, also, basically the same as that described a year ago. We estimate that the 14 planned C–130E squadrons would be more than sufficient to meet the tactical airlift needs of a major contingency in Asia and a minor contingency elsewhere, as well as to provide a rotational base for the training of airlift crews. Estimates of the requirements of a major European contingency vary widely. We expect to have through the mid-1970s a substantial number of C–130s and KC–130s in the active and reserve forces. These aircraft, together with the C–123s and C–7s, should be more than adequate to meet the European tactical airlift requirement. As to the future, we are continuing our studies of a new intra-theater transport which could give us an improved STOL or V/STOL capability.

Airlift

Active Air Force Airlift

The major issue here, as noted earlier, concerns the C–5A program. A year ago we planned to buy a total of 120 aircraft, at a cost of about $3,620 million (including about $330 million for initial spares), to equip six squadrons (96 unit equipment aircraft), provide for command support, attrition and training. Late last year, it became increasingly apparent that the cost of this program would run considerably higher than previously estimated, perhaps as much as $4,830 million (including about $1 billion for research and development and $482 million for initial spares).

We are presently committed to procure only 58 aircraft (including five research and development aircraft, all of which can be made available for operational use). This quantity is enough to equip three squadrons (48 unit equipment), and provide for command support and training.

In view of these very substantial increases in estimated costs, most of which are on the Lockheed contract, we are taking the following steps:

- Although we will exercise our option on the 57 aircraft in Run B, we will limit the Government's liability to 23 aircraft in FY 1970 instead of the 33 we had previously planned; these 23 aircraft will bring the total number on order to 81, enough for a full four-squadron force (64 unit equipment).
- We will make separate decisions at a later date on the aircraft for the fifth and sixth squadrons. So long as these decisions are made before the leadtime on those squadrons, our contract with Lockheed will allow us to decide in the negative without increasing the price to the Government of the first four squadrons.
- The concept of reserve associate squadrons now underway in the C–141 force will be applied to the C–5 to increase the overall wartime productivity of our active airlift force.

We have included in the FY 1970 budget a total of $1,002 million—$34 million for research, development, test and evaluation, $505 million for the procurement of 23 aircraft ($577 million, less $72 million in advance procurement funds provided in FY 1969), $28 million in advance procurement funds for a possible FY 1971 buy, $225 million to fund prior years over target costs, and $210 million for initial spares. Of the $1,002 million requested for FY 1970, $334 million is required to complete the funding of the first three squadrons—$34 million for research, development, test and evaluation, $225 million to fund prior year over target costs, and $75 million for initial spares.

The C–141 force reached its projected strength of 14 squadrons by

C–5A GALAXY. We are presently committed to procure only 58 aircraft, enough to equip three squadrons and provide for command support and training. We will exercise our option on 57 aircraft in run B; we will limit the Government's liability to 23 aircraft in FY 1970, bringing the total number to 81, enough for four squadrons.

the end of FY 1968. The authorized active inventory has been raised slightly in FY 1969 to offset a reduction in inter-theater capability caused by the early transfer of two C–130E squadrons from the Military Airlift Command to Tactical Air Command.

As a hedge against any slippage in the C–5A program, we plan to retain some of the current outsize airlift capability. Three C–124 squadrons will be retained through FY 1970. Three C–133 squadrons will be retained through FY 1970 and two through FY 1971.

Our analysis shows that the C–130 force programmed for FY 1973–74, 14 C–130E squadrons and one squadron of ski-equipped C–130Ds, will provide an adequate tactical airlift capability in the active forces. However, C–130E attrition has been running higher than estimated last year, and additional aircraft will have to be procured to maintain the desired force levels. We plan to procure 18 C–130Es with the FY 1968 funds provided for this purpose by the Congress, and 18 more are being procured with FY 1969 funds obtained through reprogramming. This action has been approved by the appropriate Committees of the Congress.

There are now seven C–130A squadrons and five C–130B squadrons in the active force. Starting in FY 1970 the C–130As will be phased into the reserve components, followed by the C–130Bs in FY 1973. We plan to use the C–130A aircraft to form nine Air Force Reserve and nine Air National Guard units. The C–130Bs will be used to form four Reserve and four Guard units.

Concept formulation is continuing on a new Light Intra-theater Transport (LIT), which could enter the tactical airlift force in the mid- to late 1970s. This effort has been expanded to include consideration of both STOL and V/STOL aircraft, and the evaluation will now take more time than we had originally thought necessary. Consequently, we do not plan to initiate LIT contract definition until FY 1971.

Air Force Reserve Component Airlift

All of the 40 groups which made up the Air Force Reserve (AFR) airlift force in FY 1968 will be retained through FY 1969, as desired by the Congress. Three of the four C–119 units previously scheduled for deactivation in FY 1969 will be retained in the force structure and converted to Tactical Air Support squadrons to provide Forward Air Controllers and Air Liaison Officers for the eight Army Reserve component divisions. The fourth unit was activated in May, converted to the AC–119 (gunship) and deployed to South Vietnam. It will leave its aircraft there on its return and revert to Reserve status by end FY 1969, at which time it will be assigned the same or another mission.

The C–141 "associate" unit concept described to the Congress last year has been tested and shown to be a most effective way to increase our airlift capability. . . . Five C–119 squadrons are being converted to C–141 associate units in FY 1969, and six more C–141 associate units (four conversions and two new units) will be created in FY 1970.

By end FY 1970, eight Air Force Reserve airlift units will have been converted to other missions—three to Tactical Air Support, one to C–9 Associate Aeromedical Airlift and four probably to AC–119 Gunship and/or Tactical Air Support. In addition to these 8 units and the 11 C–141 associate units, the Air Force Reserve will have 5 C–119, 14 C–124, 3 C–130 and 1 C– 130 CCTS (Combat Crew Training School) airlift units.

All of the 26 Air National Guard airlift groups in existence at the beginning of FY 1968 will be retained through FY 1969. However, in FY 1968, one group was converted to Aeromedical Airlift and another to Tactical Electronic Warfare (TEW). In FY 1969, three more groups are being converted to Aeromedical Airlift and three to Tactical Air Support. Two more groups will be converted to other (as yet undetermined) missions in FY 1970. The remaining 16 units will consist of 10 C–124, 2 C–97, 2 C–130, 1 C–123 and 1 C–141 associate.

Navy and Marine Corps Airlift

At the end of FY 1969 the Fleet Tactical Support (FTS) category will consist of 82 aircraft, including C–1/C–2 (Carrier On-board Delivery—COD), C–118, C–130 and C–131 aircraft. The COD force now numbers 37 aircraft. The previous plan was to keep it at that level through FY 1973. Recent experience with the COD force in the Pacific, however, has shown that in periods of peak demand this number of aircraft may not be sufficient to meet urgent or unexpected requirements. Accordingly, we now plan to buy some more C–2A aircraft in FY 1970, at a cost of $37 million. We will also retain through FY 1970 the 24 C–118s we had previously planned to phase out in FY 1969–70. This will provide time for the Navy to complete a more detailed study of the size and composition of the future FTS fleet, which will form the basis for a decision on procurement of a replacement type for the C–118s.

The Marine Corps airlift force is the same as that described last year, a total of 71 aircraft. Pending further study of Marine Corps requirements relative to the intra-theater capabilities of the regular airlift forces, we plan to retain all of these aircraft.

The Navy Reserve airlift force is also the same as that presented a year ago, except that 34 C–54s will be retained until the C–118s become available from the active forces.

Sealift

Although the ultimate size of the C–5A force is still an unresolved problem, we are now well on our way towards the attainment of the airlift portion of the strategic lift objective. Unfortunately, this is not the case with respect to sealift.

There are two major aspects to the sealift problem. One concerns the long-term adequacy of the nation's total sealift resources, particularly the U.S. Merchant Marine. The other concerns the immediate availability of suitable shipping in the crucial early weeks of a major wartime contingency. The first aspect of the problem cannot be solved by the Defense Department alone; it is a national problem involving other departments and agencies of the Government, as well as private interests. But the second aspect is uniquely related to defense and must be solved within the context of the Defense program.

The most demanding contingency, short of all-out nuclear war, is a major conflict in Europe and Asia simultaneously. To meet the requirements for such a contingency most effectively and economically, we must have a rapid response sealift force under the immediate control of DOD. Moreover, these ships must have certain special capabilities. First, because we may have to place them on station fully or partially loaded, they must be able to store wheeled and tracked vehicles for prolonged periods and be able to maintain and activate them in place. Second, because these ships will be the first to arrive in a contingency area, they must be able to unload cargo rapidly with no other assistance and even where no ports exist. Third, because of the increasing use of helicopters in the Army forces, these ships must be able to transport large quantities of helicopters (including the flying crane CH–54s) in a ready-to-fly condition; this means that maintenance facilities must be aboard ship.

Our existing Defense Department-controlled inter-theater sealift force is completely inadequate, both quantitatively and qualitatively, and cannot meet this requirement. It consists of 15 Victory ships (T–AKs), 6 aircraft ferries (which are old, converted cargo ships) and 2 roll-on/roll-off ships, one constructed in 1958 and the other in 1966. In addition, we have three FFD Victory ships and one new, privately-owned roll-on/roll-off ship, the Admiral Callaghan, on long-term charter. This present sealift force has only limited usefulness for rapid deployment. Its special capabilities are very limited and it is not immediately available because it is fully engaged during peacetime in point-to-point cargo carriage.

The 30-ship Fast Deployment Logistic (FDL) force which we have proposed for the last two years would have provided us with this needed rapid response sealift force. No other alternative examined over the last several years, except the procurement of additional airlift aircraft which would be prohibitively expensive, would provide this same capability on the same time schedule as the FDLs. Nevertheless, in view of the past reluctance of the Congress to authorize the FDL program and because a rapid response sealift force is so essential, we have continued our search for alternative solutions. One such solution, which we now propose, is to build a force of 15 FDLs and obtain the balance of the "immediate" sealift requirement through the long-term charter of up to 30 new type cargo ships to be privately built according to the design criteria specified by the Military Sea Transportation Service.

At least 15 FDLs would still be required under this plan because the new type charter ships would normally be engaged in the peacetime point-to-point carriage of defense cargoes, and would not be able to close forces to a contingency area until a number of days after the FDLs. Without this minimal FDL force, we would not be able to meet our deployment objectives, since these ships would carry the equipment and initial resupply for the units required to reenforce those forces already moved in by airlift. No other ships would be available early enough to meet this particular requirement, and no other ships would have the special characteristics of the FDL.

As presently envisaged, the new MSTS ship would have about one-half the capacity of the FDL and would lack some of its special features, such as a significant helicopter carrying capability, a float-on/float-off capability, dehumidified storage, equipment fueling, and maintenance and activation facilities. Nor could this ship discharge its cargo as fast as an FDL. However, we estimate that the average cost of the first 10 ships would be about $20–$25 million, compared with an average cost of $52 million for the FDL (based on a 15-ship program).

MSTS has already conducted a design competition for the new cargo ship and is now evaluating the five designs submitted. When a final design is selected, MSTS will ask for bids on the basis of an initial 5-year charter, plus options for three 5-year extensions. The successful bidder (or bidders) would then use the contractual commitment from MSTS to obtain private financing for the construction of the ships. Thus, no government obligation would be involved, except for the MSTS commitment to charter the ships. We now expect to place the first 10 ships on contract in FY 1970, with not more than two firms in order to achieve some of the economies inherent in multi-ship construction.

With regard to the FDLs, we have included $187 million in the FY 1970 budget to fund the first three ships. The remaining 12 are programmed in FY 1971–73, 4 in each year. (It should be noted that the average cost of an FDL is now estimated at $52 million compared with $47 million a year ago. Most of this increase is the result of the reduction in the program from 30 to 15 ships; the balance reflects the general increase in shipbuilding costs.)

In addition to this rapid response sealift force, we will still require a substantial amount of U.S. commercial shipping, up to 460 notional cargo ships[a] to meet two simultaneous major contingencies in Europe and Asia in the mid-1970s. Today's U.S. commercial cargo fleet, 635 notional ships (including 340 subsidized and 90 non-subsidized liner ships in foreign trade, 55 in domestic trade and 150 tramp freighters), is large enough to fulfill that requirement. However, the overall capability of the fleet is decreasing as older, World War II-built ships are retired. We expect that all of the existing non-subsidized liner ships in foreign trade will have been retired by 1975, and that we cannot count on the continued availability of the present domestic trade and tramp fleets. Accordingly, we must assume that the subsidized liner fleet will be the primary, if not the sole, source of commercial augmentation in the mid-1970s. This is so because only the directly subsidized fleet receives subsidies to permit the construction of new ships in the United States.

The subsidized ships less than 15 years old now in the fleet, plus those presently under construction in U.S. yards, represent the equivalent of 300 notional ships. Of the approximately 422 cargo ships now in the National Defense Reserve Fleet (NDRF) only 167 Victory ships, equivalent to about 132 notional ships, are expected to be available in the mid-1970s. Thus, the total available from these two sources would be about 432 notional ships.

It is clear, therefore, that additional commercial shipping will have to be constructed if we are going to be able to meet our total military contingency requirement in the mid-1970s. (Urgent civilian requirements for U.S. flag shipping would be in addition to these military contingency requirements.) A part of this need could be met by converting the 100 AP–5 troop ships now in the NDRF.

Conversion of the AP–5s would, however, provide only a partial solution to the longer-range problem of modernizing our Merchant Marine. In May 1968, the Department of Transportation proposed a new maritime program designed to make available sufficient NDRF and subsidized private shipping to fulfill our total emergency needs. The Congress, however, did not act on those proposals, and the longer-range problem still remains unresolved. A solution to this problem is urgently needed, and the Defense Department will do all it can to contribute to the solution.

Over and above the problem of total capacity is the need for a plan which would ensure the timely availability of commercial sealift augmentation in future emergencies on the basis of predetermined contractual commitments, schedules and prices. Such a plan, called RESPOND, was developed last year and was to have been implemented partially in FY 1969 and fully in FY 1970. However, an unresolved question about the legality of one part of the program (*i.e.*, the proposal to procure shipping on a uniform cost-based rate schedule for each trade route, rather than by competitive negotiation), as well as opposition by some of the unsubsidized steamship operators, made it desirable to delay implementation until the Comptroller General had an opportunity to review the program. This review was completed in October 1968. The Comptroller General ruled favorably on the legal issues involved, and we now plan to go ahead with the program.

We plan to ask all operators solicited in connection with the FY 1970 commercial sealift buy to provide us with an emergency commitment of a portion of their fleet. In addition, we are presently working out the procedures for allocating peacetime defense cargo on the basis of the operator's (both subsidized and unsubsidized) emergency vessel commitment and the service he guarantees to provide DOD in peacetime. We hope that this effort will be completed in time so that the FY 1970 cargo allocation can be based on these two factors as well as the competitively determined rates. If this is not possible, cargo will be allocated under present procedures, and implementation of the new cargo allocation process will be delayed until FY 1971.

We also plan, at a later stage, to implement a schedule of uniform rates applicable to all carriers on each trade route. These rates will be based on cost and vessel utilization data to be submitted by the carriers, which will be evaluated by MSTS on the basis of criteria furnished by the Federal Maritime Commission (FMC). The FMC will also serve as an arbiter in the event that disputes arise between DOD and industry after the cost-based rates have been implemented. The complexities involved in working out the new rate system virtually preclude its use before FY 1971.

With regard to the balance of the sealift program, four changes are worthy of note.

First, we planned last year to start during the FY 1970–72 period the construction of 9 new tankers to replace the 16 T–2 tankers now in the MSTS fleet. (The new tankers, 25,000 tons dead-weight and 32-foot draft or less, are needed primarily to provide deliveries to ports which cannot handle the larger tankers.) Now, we plan to obtain these tankers through long-term charter, rather than by new procurement. They will be built to MSTS design criteria and operated under MSTS control. As the new tankers become available in the FY 1971–73 period, the T–2s will be phased out, and the MSTS nucleus fleet tanker force will be reduced from the present level of 26 ships to 21 in FY 1971, 14 in FY 1972 and 10 in FY 1973.

Second, we had planned to retain 16 troop ships through FY 1970, phasing down to 8 in FY 1971. Now, we plan to retain 11 through FY 1970 and phase down to 10 in FY 1971. The two additional ships will be needed to lift the ground support personnel associated with the SATS airfield operation for the air wing of a Marine Expeditionary Force, a new requirement which was discussed earlier in connection with the Amphibious Forces.

Third, seven cargo ships which we had planned to phase out in FY 1971 will be retained until FY 1972, pending further analysis of our sealift needs in the light of the proposed new MSTS charter cargo ship program. We have asked the Navy to identify the ships now in the MSTS nucleus fleet which could be retired if the new charter ship program goes forward as planned.

Fourth, the planned increase in Forward Floating Depot ships from 3 to 19 will be delayed another year, from FY 1971 to FY 1972.

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[a] *A "notional" ship is a standard measure for aggregate shipping capability. It is defined as a ship with a 15,000 measurement ton-capacity, a 15-knot speed, and a 5-day loading or unloading capability.*

Research and Development

The research and development program includes all research and development activities not directly identified with systems approved for deployment. Many of the more important of these projects have already been discussed in preceding sections of this statement. Here, however, we are considering the research and development effort as a whole.

As shown in Figure 1, we are requesting a total of $8,174 million in FY 1970 for Research, Development, Test and Evaluation (RDT&E). These funds would provide for all categories of RDT&E effort, including the continued development of systems already approved for deployment. The FY 1970 request is about $170 million higher than the original FY 1969 request of $8 billion, and about $500 million more than the amount actually appropriated for FY 1969.

The overall research and development effort (which includes support from other than RDT&E appropriations) is organized into the following six categories: Research, Exploratory Development, Advanced Development, Engineering Development, Operational Systems Development, and Management and Support. Except for Operational Systems Development, these categories constitute the research and development program discussed in this section of the statement.

Research

This category includes all the work devoted to increasing our knowledge of basic natural phenomena and the solution of a variety of long-term scientific problems relevant to our future national security. The effectiveness of our weapon systems a decade from now depends on maintaining a balanced research effort across the entire spectrum of science and technology pertinent to the defense effort. DOD is the largest user of research output in the nation and must emphasize those areas most likely to be of military benefit in the future. Without a vigorous research program, we would surely lose the technical superiority we now possess. The research program also provides a link between the department and the academic community, a vital tie which keeps open a unique source of new ideas and technologies.

The Research program is organized primarily in terms of the broad sciences (*e.g.*, engineering, physical, etc.) which are in turn broken down into narrower disciplines or fields such as materials, chemistry, oceanography, etc. Because the program consists largely of thousands of individual projects and tasks, each of which requires only modest funding, we must manage it on a "level of effort" basis. The Research programs for FY 1968 and FY 1969, and that proposed for FY 1970, are shown in Figure 2 (page 34).

The amount proposed for FY 1970, $443 million, is about 6 percent higher than FY 1969. Much of the increase is the result of growth in research costs rather than the addition of new projects or the expansion of on-going ones.

As the table shows, we are requesting funds in FY 1970 to continue Project THEMIS, which was started in FY 1967 to stimulate the development of additional academic centers of defense-relevant research. In the first two years, 92 projects were initiated. A recent comprehensive survey found that all but six were producing useful results, and these six will be cancelled if the research product is not rapidly improved. We plan to start about 25 new projects in FY 1969 and about 25 more in FY 1970, for a total of almost 150. (We had originally planned to start 50 projects in each of four years, FY 1967–70, for a total of 200. The Congress, however, reduced the FY 1969 program to 25 new projects, and we are requesting the same number for FY 1970.)

Exploratory Development

The line of demarcation between research and exploratory development is by no means precise, as has been pointed out in previous years. Exploratory development is generally directed toward the application of research results and the exploitation of technological knowledge to develop materials, components, and devices with useful application to new military weapons and equipment. These efforts vary from applied research

Financial Summary of Research and Development

(TOA, $ Millions)

	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970
Research	382	388	410	378	419	443
Exploratory Development	1,125	1,131	1,049	942	912	1,012
Advanced Development	749	759	808	732	976	1,271
Engineering Development	890	871	860	811	725	1,083
Management and Support	1,573	1,628	1,609	1,565	1,622	1,690
Emergency Fund	----	----	----	----	49	50
Sub-Total, Research and Development	4,719	4,778	4,737	4,427	4,703	5,550
Operational Systems Development	2,292	2,667	3,031	3,364	3,409	3,112
Total Research and Development	7,011	7,445	7,768	7,792	8,112	8,662
Less Support from Other Appropriations	559	538	502	489	465	483
Total Obligational Authority						
RDT&E Appropriation	6,452	6,907	7,266	7,303	7,647	8,179
Financing Adjustments	+31	−161	−94	−18	−68	−5
New Obligation Authority RDT&E Appropriations	6,483	6,746	7,172	7,285	7,579	8,174

Figure 1.

Research Program

(In Millions of Dollars)

	FY 1968	FY 1969	Proposed FY 1970
Engineering Sciences	80	97	98
Physical Sciences	87	89	96
Environmental Sciences	59	65	69
Biological & Medical Sciences	31	33	33
Behavioral & Social Sciences	8	12	13
Nuclear Weapons Effects Research	44	45	50
In-House Indep. Lab. Research	32	31	33
THEMIS	27	28	33
Joint Service Electronics Program	*	6	7
Support from Other Appropriations	10	13	11
Total Research	378	419	443

* This element was included in other programs prior to FY 1969.

Figure 2.

and studies to the development of protoype and "breadboard" components and devices. The emphasis here is on the exploration and proof of the technical feasibility of various approaches to the solution of specific military problems.

The exploratory development program poses some of the same problems for the decision maker as the research effort, particularly in the variety, number and complexity of the projects in both areas. Consequently, we manage exploratory development as well as research in terms of general operational goals and broad technical areas, changing the focus or level of support of individual tasks as our priorities shift from year to year.

We are requesting a total of about $1,012 million for exploratory development in FY 1970, which is slightly above the FY 1969 request of $980 million. The amount actually available in FY 1969, $912 million, is less than the FY 1968 total of $942 million. The decrease in FY 1969 is a result of the reductions made necessary by the Revenue and Expenditure Control Act of 1968, and in no way indicates a lessening of the importance we attach to this program. Every comprehensive study of weapon system developments has shown that almost all have resulted from DOD-supported innovations rather than from other sources. We are convinced that our exploratory development activities will require increased support during the next several years, and the FY 1970 budget represents a first step in this direction.

The proposed FY 1970 Exploratory Development program would provide about $190 million to support the Advanced Research Projects Agency (ARPA), with the rest about equally distributed among the Army, the Navy and the Air Force.

ARPA operates as a small research and development management team, responding to urgent needs for centralized management of selected advanced research projects, especially those not definitely identified with a specific Service or weapon system. ARPA controls such exploratory development projects as VELA, which is directed toward developing and demonstrating an advanced surveillance system for detecting, locating and identifying nuclear tests. Another ARPA project is AGILE which involves work on special problems of remote area conflicts and focuses primarily on guerrilla warfare situations.

The Army exploratory development program focuses in part on materials, devices and techniques useful to front line troops in a wide variety of the conflict situations that might occur in the future. It also includes specific projects in support of the current effort in Southeast Asia. Examples of the kinds of developments included are new night viewing equipment, better burn treatment techniques, new small arms and even nuclear effect studies.

In a similar manner the Navy Exploratory Development program supports development of Navy and Marine Corps equipment to be used in the Vietnam conflict. Other programs include such items as submarine hull techniques, hydrofoil craft, and submarine detection devices.

Some of the most important areas in the Air Force Exploratory Development program are rocket propulsion, command and control equipment, and materials. Other significant Air Force work is devoted to studies of space guidance and control, power, communications and other techniques of military importance.

Advanced Development

The advanced development phase encompasses all the efforts to develop component and subsystem hardware for use in experimental tests required to determine the potential military utility of various projects, their specific military applications, and the cost estimates associated with alternative applications. The total amount of funds devoted to advanced development fluctuates within a fairly wide range from year to year as new projects are started and older projects are either dropped, or moved on into engineering development or operational systems development. Before embarking on full-scale development of any new or improved weapon system for which we have identified a requirement, we must provide the necessary foundation by solving in the advanced development phase problems related to the basic components and technology of the new system. A total of $1,271 million is included in the FY 1970 budget for Advanced Development, compared with $976 million in FY 1969.

Sizeable increases ($15 million or more) in 10 advanced development projects account for $221 million of the additional $295 million requested for FY 1970. These 10 projects are briefly discussed:

- **Heavy Lift Helicopter.** This is a new aerial crane configured Army helicopter with a load capability in the range of 20 to 30 tons. The increased funding (from $1 million in FY 1969 to $20 million in FY 1970) will provide for contract definition, which includes some advanced component technology effort.
- **Surface-to-Air Missile Development (SAM–D).** This is an on-going advanced development of a follow-on

to the Hawk and Hercules systems for the defense of theater forces. It is designed to counter both aerodynamic and tactical ballistic missile threats. The increased funding (from $60 million in FY 1969 to $75 million in FY 1970) would permit the initiation of engineering development when a final decision to proceed to that stage is made later this year.

- **Nike-X Advanced Development.** This on-going program is directed to the development of more advanced ABM technology, *i.e.*, beyond that required for the presently approved Sentinel system. Funding has been increased from $137 million in FY 1969 to $175 million in FY 1970, to support new developments in interceptor and discrimination technology and a greater effort on the very important systems studies.

- **Project Mallard.** This project is a cooperative effort of the United States, United Kingdom, Canada and Australia to develop and procure a common tactical communications system for their respective armies and associated air forces and, where appropriate, their navies. The increased funding (from $8 million in FY 1969 to $21 million in FY 1970) will permit the program to enter the modeling and simulation testing phase, where work will be carried out on construction and test of functional models of the most promising subsystem designs.

- **Underseas Long-Range Missile System (ULMS).** This program is a further evolutionary step in the Fleet Ballistic Missile Program, aimed at countering possible improvements in Soviet anti-submarine warfare capability. The objectives of the program are to develop a new design submarine and a new, longer-range missile which will greatly increase submarine operating areas. The funds requested for FY 1970 will be used, primarily, to define the basic characteristics of the submarine.

- **Ocean Engineering System Development.** This program supports various deep submergence ocean vehicle systems: a Deep Submergence Rescue Vehicle, a Large Object Salvage System, a Deep Submergence Search Vehicle, a Small Object Recovery Device and a Location Aid Device. Most of the increase in funding (from $20 million in FY 1969 to $35 million in FY 1970) will be used to support the Deep Submergence Search Vehicle and the Small Object Recovery Device, both of which will be able to operate down to 20,000 feet. The Deep Submergence Rescue Vehicle, which will be able to operate down to 5,000 feet, also requires a modest increase in funding.

- **Advanced Manned Strategic Aircraft (AMSA).** This aircraft is being designed as a possible replacement for the B-52G and H series in the 1978 and later time period. The increase in funding (from $25 million in FY 1969 to $77 million in FY 1970) reflects the decision to proceed with detailed design, wind tunnel testing and mockups, up to the point of readiness to build a full-scale aircraft.

- **Subsonic Cruise Armed Decoy (SCAD).** This air-launched vehicle is designed to ensure the ability of our manned bomber force to survive in a much more advanced Soviet air defense environment in the mid-1970s. The increase in funding over FY 1969 will permit a reasonable rate of development of this new system.

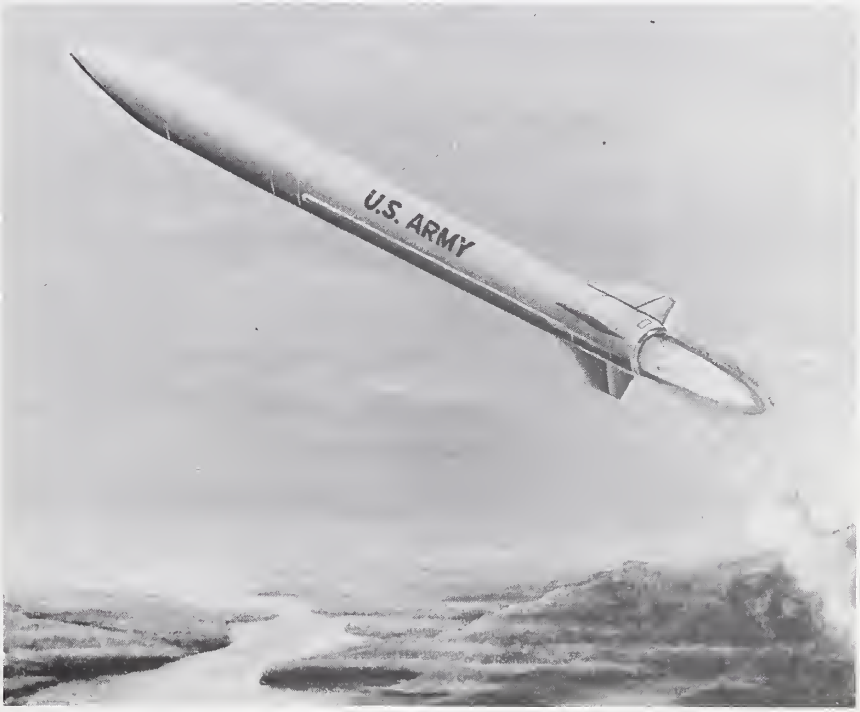
- **Advanced Ballistic Reentry System (ABRES).** This is a continuing long-range program for the advanced development of reentry and penetration technology and devices, with the results appearing gradually over a period of time in new reentry vehicles. The $121 million requested for FY 1970 (*vs.* $105 million in FY 1969) will provide the necessary level of effort in the critical areas of the ABRES program, such as the development of reentry vehicles, new heatshields and hardening concepts, and penetration aids (decoys, chaff, electronic countermeasures, etc.).

- **CONUS Air Defense Interceptor.** This is a program to define an advanced Air Defense Interceptor or to develop modifications to modernize an existing interceptor. A request for authorization of a $28 million program was denied by the Congress last year. For FY 1970, we are requesting $18.5 million to perform comparison studies and complete contract definition of the selected system, or to perform contract definition of the F-106X fire control system and start engineering of airframe and missile modifications.

Engineering Development

Engineering development includes all efforts on systems designed and engineered for operational use, but not yet approved for procurement and deployment. In this phase, large commitments are often made to individual programs and it is important that their specific usefulness be care-

SURFACE-TO-AIR MISSILE (SAM-D) is designed to counter both aerodynamic and tactical ballistic missile threats.



fully measured before they are advanced to engineering development.

A total of $1,083 million has been requested for this category in FY 1970, compared with $725 million in FY 1969 and $811 million in FY 1968. Seven major items which require increased funding in FY 1970 account for $345 million of the $358 million increase over FY 1969. Four of these are important new aircraft: the VSX, AX, F–14B/C and F–15.

The seven programs are briefly discussed:

- **VSX.** This is the Navy's new fixed wing ASW aircraft, designed to operate from ASW carriers. The funding increase over FY 1969 will permit the attainment of the approved initial operational capability (IOC) date in the early 1970s.
- **AX.** This is a new specialized close support aircraft development for the Air Force, to be initiated with the $12 million requested for FY 1970. The FY 1970 funds will permit completion of concept formulation and initiation of contract definition.
- **F–14B/C.** These Navy aircraft are possible replacements for the F–4. Both models would use the same basic airframe as the F–14A and would incorporate the advanced technology engine. In addition, the F–14C would have an advanced avionics suit. The increased funding over FY 1969 would permit initial operating capability in the mid-1970s for the F–14B and the late 1970s for the F–14C.
- **F–15.** This is the Air Force's air superiority fighter for the mid-1970s. A total of $175 million is requested for FY 1970, compared with the $45 million provided for FY 1969. Contract definition awards were made in December 1968.
- **Advanced Surface Missile System (ASMS).** This Navy program supports an integrated surface-to-air and surface-to-surface missile system for new or modernized escorts. The funding increase over FY 1969 matches the missile development schedule to that of the first DXG, which is expected to join the fleet in mid-1970s. The ASMS system uses a phased array radar and will be employed on DXGNs as well as DXGs.
- **Submarine Sonar Development.** This program supports improvement in our SSN sonars to keep ahead of Soviet developments. Because of its importance, a substantial funding increase is required in FY 1970.
- **Hard Rock Silo Development.** The objective of this program is the development of super-hard launch and launch control facilities. The funding increase (from $25 million in FY 1969 to $50 million in FY 1970) will permit a demonstration test in the early 1970s. (In addition, $8 million has been included in operations and maintenance for site surveys to reduce operational leadtime.)

Nuclear Testing and Test Detection

The Defense Department continues to share with the Atomic Energy Commission the responsibility for the maintenance of the four specific safeguards associated with the Limited Test Ban Treaty. For the Defense Department's portion of this program, we have budgeted a total of $231 million in FY 1970, of which $186 million is for research and development. This compares with $219 million in FY 1969, with $172 million for research and development.

In support of the first safeguard —underground testing—the Defense Department has the responsibility for the provision of nuclear effects data relevant to the vulnerability and survivability of our strategic offensive and defensive systems, as well as those supporting systems which may be required to operate in a nuclear environment. This is accomplished by exposing system components (reentry vehicles, guidance systems, structures, electronics packages, etc.) and materials to the effects of nuclear detonations. We have included $48 million in the FY 1970 budget for this purpose, compared with $40 million in FY 1969. The increase is due in large part to tests associated with the Sentinel system. These tests involve larger system components, and site construction is therefore more expensive.

In support of the second safeguard —maintenance of nuclear laboratory facilities and programs—the FY 1970 budget request includes $67.6 million, compared with $67.4 million in FY 1969. This safeguard is designed to provide answers to vital questions concerning vulnerability and survivability of military systems. A secondary objective is the development of nuclear effects simulators for laboratory and field use, as well as computer techniques for better prediction of effects. Also included in this category is research and exploratory development in new fuzing techniques, arming and control of nuclear weapons, new delivery techniques and weapon componentry.

The third safeguard concerns the maintenance of a capability to resume atmospheric testing on a timely basis, if a change in the situation should so require. This program provides for the maintenance of the scientific and operational facilities at Johnston Atoll and the support of Joint Task Force 8, which is responsible for the conduct of readiness exercises. The program is now being reoriented to include tests pertinent to ABM systems and effects on missiles and reentry vehicles in a dynamic situation. The FY 1970 budget includes $21.9 million for the support of the readiness program, compared with $18 million in FY 1969.

The fourth safeguard involves the monitoring of the terms of the Limited Test Ban Treaty. Nuclear test detection also provides a means for evaluation of foreign nuclear weapons programs. Two distinct efforts are involved—the ARPA VELA program and the Atomic Energy Detection System (AEDS). Our FY 1970 budget includes $93.9 million for the support of this safeguard, compared with $92.7 million now planned for FY 1969.

Space Development Projects

Inasmuch as the various elements of the Defense Department space effort are included in several program and budget categories, we have followed the practice of recapitulating the entire program at this point in the statement.

The Defense Department's program is wholly integrated into the National Space Program. It is designed to apply space technologies to our strategic and tactical weapon systems in order to increase their effectiveness, exploit the new potential in information systems made possible by satellite-based communications and sensors, and explore the usefulness of manned space systems for defense purposes. Despite these broad objectives, we have continued to exercise great care to avoid any duplication of work already being done by the National Aeronautics and Space Administration (NASA) or other agencies engaged in the National Space Program.

We are requesting a total of $2,219 million for the Defense Space Program in the coming fiscal year, about the same amount originally requested for FY 1969 but about $135 million more than the amount actually provided for that year.

The largest share of the FY 1969 reduction in space projects (*i.e.*, $85 million) was applied to the Manned Orbiting Laboratory (MOL) program, reducing it from $600 million to $515 million. The MOL, however, is still by far the largest project in the Defense Department Space Program and almost $580 million is included in the FY 1970 budget for this effort. We are presently scheduling the first qualification flight in early CY 1971 and the first manned flight a year later.

A major factor in the effective use of our forces overseas is the adequacy of communications both within the area of operations and between that area and higher echelons including the seat of Government. Currently, we depend on a combination of leased and government-owned wire, conventional radio, and satellite communications systems. Experience with our present Defense Satellite Communications System (DSCS) and analysis of technically feasible advances clearly demonstrate the potential improvements in both strategic and general purpose communications offered by this new technique. Therefore, we have decided to proceed with major improvements to the DSCS.

The improved system, known as DSCS Phase II, will consist of new, high-powered synchronous satellites, existing terminals modified to operate effectively with the new satellites, and new terminals having greater capacity and reliability and, in some cases, greater transportability. The satellites will be equipped with a single earth-coverage antenna and two steerable, narrow-beam antennas. The earth-coverage antenna distributes its radiated energy in a relatively uniform manner over that portion of the earth visible to the satellite while each narrow-beam antenna concentrates its energy in an area a few thousand miles in diameter. This concentration of energy permits effective use of smaller, more easily transported terminals to support contingency operations. The system could, for example, provide about 50 voice channels into a contingency area, several hundred channels within the area, and several wideband channels which might be used to transmit high quality photographic material or high quality secure speech. This capacity and the rapidity with which it can be installed represent a tremendous advance over our existing capability.

We expect to launch the first satellite in early 1971 at which time all existing terminals will be modified and we will introduce new terminals about a year later. We will initiate development in FY 1969 and start procurement in FY 1970 of the items required for the implementation of the improved Satellite Communications System in FY 1971. This new system accounts for the sharp increase in the DOD Satellite Communications program in FY 1970, $149 million *vs.* $71 million in FY 1969.

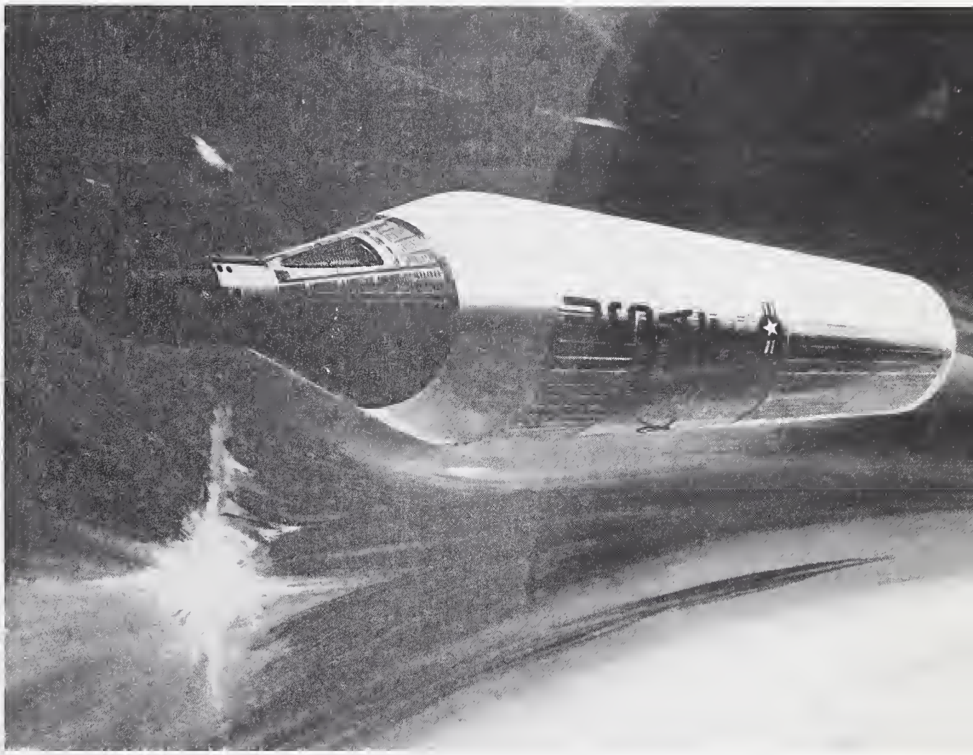
These two projects, Satellite Communications and the Manned Orbiting Laboratory, account for more than the total increase in the Defense Space Program in FY 1970.

Management and Support

A total of about $1,690 million has been included in the FY 1970 budget for the support of research and development installations and activities required for general research and development use. The increase of about $68 million over FY 1969 primarily reflects higher price levels.

Emergency Fund

Last year we requested $125 million for the Emergency Fund, but the Congress provided only $50 million. This year, in spite of the urgent need for the flexibility provided by this fund, we have limited our request to $50 million (plus the usual $150 million of transfer authority), which is far below the amounts provided by the Congress in the years before FY 1969. And, even in those years we found the Emergency Fund inadequate to meet all of the varying requirements of the Southeast Asia conflict and other essential, but unpredictable, research and development demands. Accordingly, the $50 million requested for FY 1970 must be considered an absolute minimum.



MANNED ORBITING LABORATORY (MOL) is still, by far, the largest project in the Defense Department space program. The first qualification flight is scheduled for CY 1971, the first manned flight a year later.

Financial Tables Relating to Defense Department Budget for FY 1970

Table No. 1

Department of Defense
BUDGET SUMMARY—FY 1970
(Millions of Dollars)

	FY 1968	FY 1969	FY 1970
Total Obligational Authority (TOA):			
Military Personnel	22,055	23,996	24,384
Operation and Maintenance	20,950	22,516	21,941
Subtotal—Operations	43,005	46,512	46,325
Procurement	23,610	24,455	25,124
Research, Development, Test & Evaluation	7,303	7,647	8,179
Military Construction	1,613	1,332	1,951
Family Housing	600	536	634
Civil Defense	86	61	75
Special Foreign Currency Program	—	11	4
Subtotal—Military Functions	76,216	80,554	82,293
Military Assistance	600	748	709
Total—TOA	76,816	81,302	83,002
Financing Adjustments	−69	−4,003	−1,970
Budget Concepts Adjustments*	−345	−301	−387
Budget Authority (New Obligational Authority—NOA)	76,402	76,998	80,645
Outlays (Expenditures)	78,027	78,400	79,000

Notes:

FY 1969 TOA and NOA amounts include proposed supplemental appropriations as follows: Southeast Asia special support, $1,631,500,000; military pay increase, $907,200,000; civilian pay increase, $198,900,000; wage board increases, $84,600,000; retired pay cost of living increase, $162,000,000; other supplementals under existing legislation relating to reservists and National Guard technicians, $27,700,000.

* Budget concepts adjustments arise from the new budget concepts adopted in the fall of 1967, and appearing for the first time in the budget for FY 1969. For DOD, these concepts adjustments include certain receipts from the public and the net effect of trust fund transactions. *Receipts from the public* include those which, under the law, cannot be credited to an appropriation or fund of the DOD but are deposited in a Treasury receipt account. Such receipts include net proceeds from sale of surplus property, equipment rentals, and recoveries under contract renegotiation. *Trust funds* are administered by DOD, but they can be used only for the purposes of the trust. For military functions these are very small, and largely involve amounts paid in by individuals to be used for welfare and morale activities. Foreign military sales are financed through a military assistance trust fund, and the concepts adjustment reflects the net of the expenditure and collections of that fund.

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Table No. 2

Department of Defense

FINANCIAL SUMMARY BY PROGRAM, DOD COMPONENT AND FUNCTIONAL CLASSIFICATION

(Millions of Dollars)

	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970
Program						
Strategic Forces	6,855	6,502	6,532	7,615	9,116	9,596
General Purposes Forces	18,899	28,801	31,916	32,411	33,246	32,126
Intelligence and Communications	4,480	4,998	5,350	5,683	6,007	6,185
Airlift and Sealift	1,342	1,610	1,857	1,860	1,629	2,072
Guard and Reserve Forces	1,943	2,318	2,673	3,185	2,673	2,913
Research and Development	4,719	4,778	4,737	4,427	4,703	5,550
General Supply and Maintenance	4,728	5,940	7,721	8,217	8,811	8,971
Training, Medical, etc.	5,870	7,439	8,973	9,969	10,245	10,686
Administration and Associated Activities	1,191	1,487	1,335	1,347	1,491	1,465
Support of Other Nations	1,149	2,040	2,358	2,376	3,459	3,231
Retired Pay—Appropriation over/under(—) accrual	−517	−465	−409	−272	−79	206
Total Obligational Authority (TOA)	50,657	65,449	73,042	76,816	81,302	83,002
Financing adjustments	−164	−1,916	−318	−69	−4,003	−1,970
Budget concepts adjustments	NA	NA	268	−345	−301	−387
Budget Authority (NOA)	50,493	63,533	72,992	76,402	76,998	80,645
Budget Outlays	47,401	55,377	68,331	78,027	78,400	79,000
Outlays as Percentage of GNP	7.3	7.8	9.0	10.5	8.8	8.3
DOD Component						
Department of Army (Incl. OCD & Foreign Currency)	12,361	18,633	22,600	25,447	26,684	26,407
Department of Navy (Incl. Foreign Currency)	14,731	19,190	21,339	21,242	22,458	24,409
Department of Air Force (Incl. Foreign Currency)	19,505	23,054	24,602	25,287	26,670	26,232
Defense Agencies (Excl. Fam. Housing & Foreign Cur.)	2,485	2,917	3,320	3,641	4,206	4,620
Family Housing	576	609	439	600	536	634
Military Assistance	1,000	1,046	743	600	748	709
Total Obligational Authority (TOA)	50,657	65,449	73,042	76,816	81,302	83,002
Functional Classification						
Military Personnel	14,816	17,047	20,067	22,055	23,996	24,384
Operation and Maintenance	12,572	15,018	19,434	20,950	22,516	21,941
Procurement	14,081	22,154	23,743	23,610	24,455	25,124
Research, Development, Test, and Evaluation	6,452	6,097	7,266	7,303	7,647	8,179
Military Construction	1,060	2,562	1,245	1,613	1,332	1,951
Family Housing	576	609	439	600	536	634
Civil Defense and Spec. Foreign Currency Program	102	105	105	86	72	79
Military Assistance	1,000	1,046	743	600	748	709
Total Obligational Authority (TOA)	50,657	65,449	73,042	76,816	81,302	83,002

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Table No. 3

Department of Defense
DIRECT BUDGET PLAN (TOA), BUDGET AUTHORITY (NOA), AND OUTLAYS
Fiscal Years 1968–1970
(Millions of Dollars)

	Direct Budget Plan (TOA)			Budget authority (NOA)			Outlays		
	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970
Functional Classification									
Military Personnel									
Active Forces	19,086	20,593	20,600	19,100	20,593	20,600	18,988	20,317	20,456
Reserve Forces	875	953	1,049	923	953	1,049	871	907	988
Retired Pay	2,093	2,450	2,735	2,095	2,450	2,735	2,095	2,441	2,720
Total—Military Personnel	22,055	23,996	24,384	22,118	23,996	24,384	21,954	23,665	24,164
Operation and Maintenance	20,950	22,516	21,941	20,950	22,516	21,941	20,578	22,106	21,841
Subtotal—Operations	43,005	46,512	46,325	43,068	46,512	46,325	42,532	45,771	46,005
Procurement	23,610	24,455	25,124	23,408	20,784	23,241	23,283	24,337	23,435
Research, Dev., Test, and Eval.	7,303	7,647	8,179	7,285	7,579	8,174	7,747	7,545	7,805
Emergency Fund, Southeast Asia	—	—	—	56	—	—	—	—	—
Military Construction	1,613	1,332	1,951	1,543	1,168	1,949	1,281	1,508	1,370
Family Housing	600	536	634	612	523	618	495	630	625
Civil Defense	86	61	75	86	60	75	108	82	72
Special Foreign Currency Program	—	11	4	11	—	—	2	2	4
Working Capital Accounts	—	—	—	178	—	—	2,090	−1,947	−694
Military Assistance	600	748	709	500	671	650	601	548	591
Budget concepts adjustments:									
Trust funds	—	—	—	781	817	757	1,015	1,042	931
Intragovernmental transactions	—	—	—	−7	−7	−7	−7	−7	−7
Offsetting receipts	—	—	—	−1,119	−1,111	−1,137	−1,119	−1,111	−1,137
Total—Budget concepts adj.	—	—	—	−345	−301	−387	−111	−77	−213
Total—Department of Defense	76,816	81,302	83,002	76,402	76,998	80,645	78,027	78,400	79,000
Department or Agency									
Department of the Army	25,361	26,618	26,331	25,237	25,262	25,862	25,223	24,920	25,094
Department of the Navy	21,242	22,453	24,408	21,122	20,995	23,736	22,071	22,573	22,766
Department of the Air Force	25,287	26,669	26,222	25,196	25,435	25,353	25,734	25,933	25,543
Defense Agencies/OSD	4,241	4,753	5,256	4,450	4,742	5,211	4,237	4,282	4,997
Civil Defense	86	61	75	86	60	75	108	82	82
Total—Military Functions	76,216	80,554	82,293	76,091	76,495	80,238	77,373	77,790	78,471
Military Assistance	600	748	709	312	503	408	654	610	529
Total—Department of Defense	76,816	81,302	83,002	76,402	76,998	80,645	78,027	78,400	79,000

Note:

(1) FY 1969 TOA and NOA amounts include proposed supplemental appropriations as follows: Southeast Asia special support, $1,631,500,000; military pay increase, $907,200,000; civilian pay increase, $198,900,000; wage board increases, $84,600,000; retired pay cost of living increase, $162,000,000; other supplementals under existing legislation relating to reservists and National Guard technicians, $27,700,000.

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Table No. 4

Department of Defense
DIRECT BUDGET PLAN (TOA), BUDGET AUTHORITY, AND OUTLAYS
Fiscal Years 1968–1970 by Functional Classification and Department or Agency
(Millions of Dollars)

	Dept. of Defense—Total			Dept. of the Army			Dept. of the Navy			Dept. of the Air Force			Def. Ags/OSD/ OCD/MAP		
	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970	FY 1968	FY 1969	FY 1970
Total Obligational Authority (TOA):	76,816	81,302	83,002	25,361	26,618	26,331	21,242	22,453	24,408	25,287	26,669	26,222	4,928	5,563	6,041
Military Personnel															
Active Forces	19,086	20,593	20,600	7,820	8,491	8,535	5,588	6,004	6,106	5,677	6,098	5,959	—	—	—
Reserve Forces	875	953	1,049	570	614	675	157	175	185	148	165	189	—	—	—
Retired Pay	2,093	2,450	2,735	—	—	—	—	—	—	—	—	—	2,093	2,450	2,735
Total—Military Personnel	22,055	23,996	24,384	8,391	9,105	9,210	5,745	6,179	6,291	5,825	6,263	6,148	2,093	2,450	2,735
Operation and Maintenance	20,950	22,516	21,941	8,372	8,342	7,902	5,402	5,848	5,840	6,169	7,207	7,049	1,007	1,120	1,150
Subtotal—Operations	43,005	46,512	46,325	16,763	17,447	17,112	11,147	12,027	12,131	11,994	13,470	13,197	3,100	3,570	3,885
Procurement															
Aircraft	9,469	8,409	8,157	1,282	843	941	2,760	2,478	2,659	5,428	5,088	4,556	—	—	—
Missiles	2,518	3,390	4,115	493	926	1,348	601	781	885	1,424	1,682	1,882	—	—	—
Ships	1,232	1,207	2,849	—	—	—	1,232	1,207	2,848	—	—	—	—	—	—
Tracked Combat Vehicles	424	296	336	406	284	298	18	12	38	—	—	—	—	—	—
Ordnance, Vehicles & Rel. Equip.	6,443	7,403	6,116	3,023	3,548	2,651	1,769	1,841	1,776	1,650	2,013	1,689	1	1	1
Electronics & Communications	1,428	1,592	1,374	609	669	432	465	537	462	346	379	466	8	7	15
Other Procurement	2,096	2,158	2,177	744	617	663	809	1,072	994	500	419	427	44	50	92
Total—Procurement	23,610	24,455	25,124	6,556	6,887	6,333	7,653	7,928	9,662	9,348	9,581	9,020	53	58	108
Research, Dev., Test, & Eval.															
Military Sciences	536	586	631	162	172	182	147	153	160	143	152	159	84	109	130
Aircraft	1,126	987	1,354	138	117	132	217	396	577	762	473	645	8	1	—
Missiles	2,485	2,467	2,483	658	755	883	769	713	552	953	938	976	105	60	72
Military Astronautics	1,038	1,168	1,151	7	11	14	15	18	24	1,013	1,136	1,110	3	3	3
Ships and Small Craft	248	344	346	*	*	*	248	344	345	—	—	—	—	—	—
Ordnance, Vehicles & Rel. Equip.	323	334	302	174	171	193	150	164	109	—	—	—	—	—	—
Other Equipment	1,127	1,221	1,334	348	351	363	244	237	285	277	384	400	258	250	286
Program-wide Management & Support	420	491	528	35	53	54	96	137	154	278	291	309	11	11	10
Emergency Fund	—	49	50	—	—	—	—	—	—	—	—	—	—	49	50
Total—RDT&E	7,303	7,647	8,179	1,522	1,629	1,822	1,886	2,161	2,207	3,426	3,373	3,599	469	484	551
Military Construction	1,613	1,332	1,951	521	655	1,064	554	338	408	518	245	404	20	95	75
Family Housing	600	536	634	—	—	—	—	—	—	—	—	—	600	536	634
Civil Defense	86	61	75	—	—	—	—	—	—	—	—	—	86	61	75
Special Foreign Currency Program	—	11	4	—	—	—	—	—	—	—	—	—	—	11	4
Total—Military Functions	76,216	80,554	82,293	25,361	26,618	26,331	21,242	22,453	24,408	25,287	26,669	26,222	4,328	4,815	5,332
Military Assistance	600	748	709	—	—	—	—	—	—	—	—	—	600	748	709
TOA Total—Dept. of Defense	76,816	81,302	83,002	25,361	26,618	26,331	21,242	22,453	24,408	25,287	26,669	26,222	4,928	5,563	6,041
Financing adjustments	−69	−4,003	−1,970	−58	−1,297	−402	−85	−1,419	−633	−35	−1,199	−832	109	−88	−103
Budget concepts adjustments	−345	−301	−387	−67	−58	−67	−35	−39	−39	−55	−35	−37	−188	−168	−242
Budget Authority (NOA)	76,402	76,998	80,645	25,237	25,262	25,862	21,122	20,995	23,736	25,196	25,435	25,353	4,848	5,305	5,694
Outlays	78,027	78,400	79,000	25,223	24,920	25,094	22,071	22,573	22,766	25,734	25,933	25,543	4,999	4,974	5,598

Note:

(1) FY 1969 TOA and NOA amounts include proposed supplemental appropriations as follows: Southeast Asia special support, $1,631,500,000; military pay increases, $907,200,000; civilian pay increase, $198,900,000; wage board increases, $84,600,000; retired pay cost of living increase, $162,000,000; other supplementals under existing legislation relating to reservists and National Guard technicians, $27,700,000.

* Less than $500,000.

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Table No. 5

Department of Defense
PLANNED OBLIGATIONS AND UNOBLIGATED BALANCES
Fiscal Years 1968–1970
(Millions of Dollars)

	Unobligated balance brought forward	Budget authority (NOA)	Balances transferred	Reimbursable orders	Total available for obligation	Direct obligations	Reimbursable obligations	Write-offs	Unobligated balance carried forward	Unobligated carryover as % of available
Fiscal Year 1968—Actual										
Military Functions										
Military Personnel	—	22,118	—	193	22,311	22,055	193	−64	—	—
Operation and Maintenance	61	20,950	11	2,013	23,035	20,950	2,040	−11	34	0.1
Procurement	11,175	23,408	87	2,911	37,581	24,033	2,848	—	10,701	28.5
Research, Dev., Test, & Eval.	1,003	7,285	—	571	8,859	7,460	541	—	859	9.7
Emergency Fund, Southeast Asia	—	56	—	—	56	—	—	—	56	100.0
Military Construction	1,281	1,543	15	538	3,377	1,296	489	—	1,593	47.2
Family Housing	178	612	—	6	796	566	—	−3	228	28.6
Civil Defense	22	86	—	*	109	100	*	*	8	7.5
Special Foreign Currency Program	5	11	—	—	16	1	—	—	16	96.3
Total–Military Functions	13,725	76,069	113	6,234	96,141	76,459	6,111	−77	13,494	14.0
Military Assistance	12	500	−113	6	406	401	—	—	5	1.2
Total—Department of Defense	13,737	76,569	—	6,240	96,547	76,860	6,111	−77	13,499	14.0
Fiscal Year 1969—Estimated										
Military Functions										
Military Personnel	—	23,996	—	198	24,194	23,996	198	—	—	—
Operation and Maintenance	34	22,516	1	1,905	24,456	22,516	1,921	—	19	0.1
Procurement	10,701	20,784	1,576	3,140	36,201	24,465	3,053	—	8,683	24.0
Research, Dev., Test, & Eval.	859	7,579	—	608	9,046	7,651	615	—	781	8.6
Emergency Fund, Southeast Asia	56	—	−56	—	—	—	—	—	—	—
Military Construction	1,593	1,168	10	758	3,528	1,692	782	—	1,054	29.9
Family Housing	228	523	—	23	774	685	—	−13	75	9.7
Civil Defense	8	60	1	*	69	68	*	—	1	1.4
Special Foreign Currency Program	16	—	—	—	16	6	—	—	9	59.3
Total—Military Functions	13,494	76,628	1,531	6,632	98,284	81,080	6,569	−13	10,622	10.8
Military Assistance	5	671	—	6	682	677	—	—	5	0.7
Total—Department of Defense	13,499	77,299	1,531	6,638	98,966	81,757	6,569	−13	10,627	10.7
Fiscal Year 1970—Estimated										
Military Functions										
Military Personnel	—	24,384	—	198	24,582	24,384	198	—	—	—
Operation and Maintenance	19	21,941	—	1,922	23,882	21,941	1,921	—	20	0.1
Procurement	8,683	23,241	400	3,252	35,576	24,323	3,092	—	8,161	22.9
Research, Dev., Test, & Eval.	781	8,174	—	613	9,568	8,162	614	—	792	8.3
Military Construction	1,054	1,949	—	602	3,605	1,994	647	—	964	26.7
Family Housing	75	618	—	7	700	660	—	−6	34	4.9
Civil Defense	1	75	—	*	76	76	*	—	*	0.5
Special Foreign Currency Program	9	—	—	—	9	9	—	—	—	—
Total—Military Functions	10,622	80,382	400	6,594	97,998	81,549	6,473	−6	9,971	10.2
Military Assistance	5	650	—	6	661	656	—	—	5	0.8
Total—Department of Defense	10,627	81,032	400	6,600	98,659	82,205	6,473	−6	9,976	10.1

Note: Revolving fund transactions and budget concepts adjustments are excluded since they have no impact on direct obligation for service account.

* Less than $500,000.

OASD (Comptroller)
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Table No. 6

Department of Defense
ESTIMATED OUTLAYS AND UNEXPENDED BALANCES
Fiscal Years 1968–1970
(Millions of Dollars)

	Unexpended balance brought forward	Budget authority (NOA)	Unobl. balances transferred	Total avail. for expend.	Outlays	Restorations and writeoffs	Unexpended balance carried forward	Unexpended carryover as % of avail.
FY 1968—Actual								
Military Functions								
Military Personnel	935	22,118	−27	23,026	21,954	−206	867	3.8
Operation and Maintenance	2,737	20,950	16	23,703	20,578	38	3,163	13.3
Procurement	31,499	23,408	87	54,993	23,283	—	31,711	57.7
Research, Dev., Test, & Eval.	4,759	7,285	—	12,044	7,747	—	4,297	35.7
Emergency Fund, Southeast Asia	—	56	—	56	—	—	56	100.0
Military Construction	2,199	1,543	163	3,905	1,281	—	2,623	67.2
Family Housing	288	612	—	900	495	−4	401	44.6
Civil Defense	114	86	—	200	108	−4	89	44.3
Special Foreign Currency Prog.	7	11	—	19	2	—	17	90.7
Revolving funds	2,689	178	—	2,867	2,090	14	792	27.6
Budget concepts adjustments	26	−157	—	−131	−164	—	33	XX
Total—Military Functions	45,253	76,091	239	121,583	77,373	−161	44,049	36.2
Miltary Assistance								
Military Assistance gen. funds	1,359	500	−261	1,598	619	—	980	61.3
Revolving funds	380	—	−2	378	−18	—	396	104.7
Budget concepts adjustments	3,138	−188	—	2,949	53	—	2,896	98.2
Total—Military Assistance	4,878	312	−263	4,926	654	—	4,272	86.7
Total—Dept. of Defense	50,130	76,402	−24	126,508	78,027	−161	48,320	38.2
FY 1969—Estimated								
Military Functions								
Military Personnel	867	23,996	—	24,863	23,665	—	1,198	4.8
Operation and Maintenance	3,163	22,516	8	25,687	22,106	—	3,581	13.9
Procurement	31,711	20,784	1,576	54,071	24,337	—	29,734	55.0
Research, Dev., Test, & Eval.	4,297	7,579	—	11,876	7,545	—	4,331	36.5
Emergency Fund, Southeast Asia	56	—	−56	—	—	—	—	—
Military Construction	2,623	1,168	10	3,801	1,508	—	2,293	60.3
Family Housing	401	523	—	925	630	−13	281	30.4
Civil Defense	89	60	1	150	82	—	68	45.2
Special Foreign Currency Prog.	17	—	—	17	2	—	15	88.1
Revolving funds	792	—	−1,531	−739	−1,947	—	1,208	XX
Budget concepts adjustments	33	−133	—	−100	−138	—	39	XX
Total—Military Functions	44,049	76,495	7	120,551	77,790	−14	42,747	35.5
Military Assistance								
Military Assistance gen. funds	980	671	—	1,651	551	—	1,100	66.6
Revolving funds	396	—	—	396	−2	−35	363	91.8
Budget concepts adjustments	2,896	−168	—	2,728	62	—	2,666	97.7
Total—Military Assistance	4,272	503	—	4,774	610	−35	4,130	86.5
Total—Dept. of Defense	48,320	76,998	7	125,325	78,400	−48	46,877	37.4
FY 1970—Estimated								
Military Functions								
Military Personnel	1,198	24,384	—	25,582	24,164	—	1,418	5.5
Operation and Maintenance	3,581	21,941	—	25,522	21,841	—	3,681	14.4
Procurement	29,734	23,241	400	53,375	23,435	—	29,940	56.1
Research, Dev., Test, & Eval.	4,331	8,174	—	12,505	7,805	—	4,700	37.6
Military Construction	2,293	1,949	—	4,242	1,370	—	2,872	67.7
Family Housing	281	618	—	899	625	−6	267	29.8
Civil Defense	68	75	—	143	72	—	71	50.0
Special Foreign Currency Prog.	15	—	—	15	4	—	11	76.4
Revolving funds	1,208	—	−400	808	−694	—	1,501	185.9
Budget concepts adjustments	39	−144	—	−106	−150	—	44	XX
Total—Military Functions	42,747	80,238	—	122,985	78,471	−6	44,507	36.2
Military Assistance								
Military Assistance gen. funds	1,100	650	—	1,750	571	—	1,179	67.4
Revolving funds	363	—	—	363	20	−49	295	81.1
Budget concepts adjustments	2,666	−242	—	2,424	−62	—	2,486	102.6
Total—Military Assistance	4,130	408	—	4,537	529	−49	3,959	87.3
Total—Dept. of Defense	46,877	80,645	—	127,522	79,000	−55	48,467	38.0

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Table No. 7

Department of Defense
FY 1969 BUDGET AUTHORITY ENACTED AND PROPOSED SUPPLEMENTALS
(Thousands of Dollars)

	An enacted	Transfers and adjustments	Proposed supplementals			Revised total
			Military and civilian pay increase	Southeast Asia activities	Enacted legislation-retired pay & reservists	
Military Functions						
Military Personnel						
Military Personnel, Army	8,000,000	—	331,000	160,000	—	8,491,000
Military Personnel, Navy	4,235,000	—	198,700	25,300	—	4,459,000
Military Personnel, Marine Corps	1,474,000	—	64,500	6,500	—	1,545,000
Military Personnel, Air Force	5,680,000	—	267,600	150,400	--	6,098,000
Reserve Personnel, Army	287,200	—	5,600	—	—	292,800
Reserve Personnel, Navy	125,000	—	3,500	—	5,000	133,500
Reserve Personnel, Marine Corps	31,100	—	1,600	—	8,300	41,000
Reserve Personnel, Air Force	71,800	—	1,900	—	—	73,700
National Guard Personnel, Army	304,500	—	16,400	—	—	320,900
Nat'l Guard Personnel, Air Force	88,000	—	3,400	—	—	91,400
Retired Pay, Defense	2,275,000	—	13,000	—	162,000	2,450,000
Total—Military Personnel	22,571,600	—	907,200	342,200	175,300	23,996,300
Operation and Maintenance						
Operation and Maintenance, Army	7,805,000	−259	106,800	152,400	—	8,063,941
Operation and Maintenance, Navy	5,356,200	237	26,100	—	—	5,382,537
Operation and Maintenance, Marine Corps.	435,700	—	4,600	24,300	—	464,600
Operation and Maintenance, Air Force	6,551,000	−395	91,200	282,200	—	6,924,005
Operation and Maintenance, Def. Agencies.	1,036,800	−5,861	40,500	—	—	1,071,439
Operation and Maint., Army Nat'l. Guard.	264,664	—	7,600	—	5,400	277,664
Operation and Maint., Air Nat'l. Guard	267,000	—	6,682	—	9,000	282,682
Claims, Defense	38,000	—	—	—	—	38,000
Contingencies, Defense	10,000	—	—	—	—	10,000
Court of Military Appeals, Defense	636	—	18	—	—	654
Total—Operation and Maintenance	21,765,000	−6,278	283,500	458,900	14,400	22,515,522
Procurement						
Procurement of Equipment & Missiles, Army	5,031,400	—	—	727,800	—	5,759,200
Aircraft Procurement, Air Force	3,860,000	—	—	102,600	—	3,962,600
Other Procurement	11,090,500	−28,000	—	—	—	11,062,500
Total—Procurement	19,981,900	−28,000	—	830,400	—	20,784,300
Research, Development, Test & Evaluation	7,551,328	28,000	—	—	—	7,579,328
Military Construction	1,168,476	—	—	—	—	1,168,476
Family Housing	589,900	−66,408	—	—	—	523,492
Civil Defense	60,540	−125	—	—	—	60,415
Budget Concepts Adjustments	−140,943	8,025	—	—	—	−132,918
Total—Military Functions	73,547,801	−64,786	1,190,700	1,631,500	189,700	76,494,915
Military Assistance						
Military Assistance excluding adj.	671,000	—	—	—	—	671,000
Bidget Concepts Adjustments	−80,000	−88,325	—	—	—	−168,325
Total—Military Assistance	591,000	−88,325	—	—	—	502,675
Total—Department of Defense	74,138,801	−153,111	1,190,700	1,631,500	189,700	76,997,590

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Table No. 8

Department of Defense

ORDER OF MAGNITUDE DATA ON COMPARATIVE NEW OBLIGATIONAL AUTHORITY BY FUNCTIONAL TITLE

Selected Fiscal Years 1959–1970

(Millions of Dollars)

	FY 1959	FY 1961	FY 1963	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970
Functional classification									
Military Personnel									
Active Forces	10,709	10,695	11,431	12,699	14,655	17,426	19,100	20,593	20,600
Reserve Forces	644	660	672	751	818	951	923	953	1,049
Retired Pay	640	790	1,026	1,399	1,600	1,839	2,095	2,450	2,735
Total	11,993	12,144	13,129	14,849	17,073	20,216	22,118	23,996	24,384
Operation and Maintenance	10,187	10,702	11,496	12,603	15,339	19,434	20,950	22,516	21,941
Subtotal—Operations	22,180	22,846	24,625	27,452	32,412	39,650	43,068	46,512	46,325
Procurement									
Aircraft	6,167	4,998	5,882	5,962	9,354	9,579	9,452	7,519	7,916
Missiles	3,966	2,078	3,969	2,615	1,642	2,207	2,493	3,326	4,027
Ships	1,943	2,246	2,939	1,905	1,522	1,757	1,301	821	2,698
Tracked Combat Vehicles	([a])	([a])	([a])	211	435	517	424	262	336
Ordnance, Vehicles and Related Equipment	545	1,034	1,959	1,431	4,252	5,302	6,311	6,900	5,482
Electronics and Communications	982	935	1,176	1,039	1,240	1,385	1,432	1,478	1,244
Other Procurement	701	425	742	672	1,568	2,125	1,994	2,008	1,937
Total	14,304	11,716	16,667	13,836	20,013	22,871	23,408	22,314	23,641
Research, Development, Test and Evaluation	3,777	6,033	6,993	6,483	6,746	7,172	7,285	7,579	8,174
Military Construction	1,385	1,061	1,204	1,049	2,566	1,098	1,543	1,168	1,949
Family Housing	—	—	590	631	666	507	612	523	618
Civil Defense	—	—	126	105	107	102	86	60	75
Special Foreign Currency Program & Emergency Fund, SEA	—	—	—	—	—	7	67	—	—
Working Capital Accounts (Revolving funds)	57	30	—	—	—	535	178	—	—
Transfers from prior year balances [b]	−535	−366	−410	−193	—	−1	—	−1,530	−400
Military Assistance	1,515	1,785	1,325	1,130	1,023	782	500	671	650
Budget concepts adjustments	([c])	([c])	([c])	([c])	([c])	268	−345	−301	−387
Total—Department of Defense	42,683	43,106	51,119	50,493	63,533	72,992	76,402	76,998	80,645
Department of Agency									
Department of the Army	9,381	9,914	11,631	12,003	17,492	22,876	25,237	25,262	25,862
Department of the Navy	11,820	12,431	15,286	14,845	18,486	20,669	21,122	20,995	23,736
Department of the Air Force	18,713	17,884	20,179	19,219	22,655	24,193	25,196	25,435	25,353
Defense Agencies/OSD	1,255	1,092	2,572	3,192	3,770	3,970	4,450	4,742	5,211
Civil Defense	—	—	126	105	107	101	86	60	75
Military Assistance [d]	1,515	1,785	1,325	1,130	1,023	1,183	312	503	408
Total—Department of Defense	42,683	43,106	51,119	50,493	63,533	72,992	76,402	76,998	80,645

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[a] Amount included in entry for "Ordnance, Vehicles, and Related Equipment."

[b] Amounts by functional classification above include transfers from prior year balances to reflect total obligational availability, with this one line deduction to net to NOA.

[c] Data for "Budget concept adjustments" (netted against NOA in the FY 1969 and FY 1970 Budget presentations) have not been compiled and reflected in totals for FY 1966 and prior years.

[d] Amounts shown for FY 1967–1969 include the applicable portion of "Budget concepts adjustments" itemized separately in the functional classification section above.

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Table No. 9

Department of Defense
ORDER OF MAGNITUDE DATA ON COMPARATIVE OUTLAYS BY FUNCTIONAL TITLE
Selected Fiscal Years 1959–1970
(Millions of Dollars)

	FY 195	FY 1961	FY 1963	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970
Functional classification									
Military Personnel									
Active Forces	10,545	10,651	11,386	12,662	14,407	17,054	18,988	20,317	20,456
Reserve Forces	615	648	599	725	755	902	871	907	988
Retired Pay	641	786	1,015	1,384	1,591	1,830	2,095	2,441	2,720
Total	11,801	12,085	13,000	14,771	16,753	19,787	21,954	23,665	24,164
Operation and Maintenance	10,378	10,611	11,874	12,349	14,710	19,000	20,578	22,106	21,841
Subtotal—Operations	22,179	22,696	24,874	27,120	31,463	38,787	42,532	45,771	46,005
Procurement									
Aircraft	7,730	5,898	6,309	5,200	6,635	8,411	9,462	8,990	8,231
Missiles	3,337	2,972	3,817	2,096	2,069	1,930	2,219	2,879	3,226
Ships	1,491	1,801	2,522	1,713	1,479	1,398	1,356	1,700	1,676
Tracked Combat Vehicles	(a)	(a)	(a)	236	202	274	457	368	293
Ordnance, Vehicles and Related Equipment	399	675	1,665	1,073	1,697	3,978	5,990	6,907	6,671
Electronics and Communications	720	1,042	1,427	897	983	1,284	1,595	1,555	1,384
Other Procurement	730	706	891	625	1,273	1,737	2,204	1,938	1,953
Tota	14,409	13,095	16,632	11,839	14,339	19,012	23,283	24,337	23,435
Research, Development, Test and Evaluation	2,866	6,131	6,376	6,236	6,259	7,160	7,747	7,545	7,805
Military Construction	1,948	1,605	1,144	1,007	1,334	1,536	1,281	1,508	1,370
Family Housing	—	—	427	619	647	482	495	630	625
Civil Defense	(*)	(*)	203	93	86	100	108	82	72
Special Foreign Currency Program	—	—	—	—	—	—	2	2	4
Working Capital Accounts (Revolving funds)	−179	−300	−1,401	−741	281	512	2,090	−1,947	−694
Military Assistance	2,340	1,449	1,721	1,229	968	873	601	548	591
Budget concepts adjustments	(b)	(b)	(b)	(b)	(b)	−130	−111	−77	−213
Total—Department of Defense	43,563	44,676	49,973	47,401	55,377	68,331	78,027	78,400	79,000
Department or Agency									
Department of the Army	9,467	10,130	11,499	11,600	14,832	20,961	25,223	24,920	25,094
Department of the Navy	11,720	12,214	14,005	13,399	16,026	19,246	22,071	22,573	22,766
Department of the Air Force	19,083	19,785	20,642	18,216	20,131	22,918	25,734	25,933	25,543
Defense Agencies/OSD	953	1,098	1,905	2,865	3,335	4,241	4,237	4,282	4,997
Civil Defense	(*)	(*)	203	93	86	100	108	82	72
Military Assistance (c)	2,340	1,449	1,721	1,229	968	865	654	610	529
Total—Department of Defense	43,563	44,676	49,973	47,401	55,377	68,331	78,027	78,400	79,000

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*Less than $500,000.

[a] Amount included in entry for "Ordnance, Vehicles, and Related Equipment."

[b] Data for "Budget concepts adjustments" (applied to expenditures in the FY 1969 and FY 1970 Budget presentations) have not been compiled and reflected in totals for FY 1966 and prior years.

[c] Amounts shown for FY 1967–1970 include the applicable portion of "Budget concepts adjustments" itemized separately in the functional classification section above.

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Table No. 10 Department of Defense

MAJOR PROCUREMENT ITEM QUANTITIES

FY 1969 and 1970 Programs

	FY 1969 Program [1]	FY 1970 Program
Aircraft		
Army	1,493	1,014
Navy and Marine Corps	639	509
Air Force	990	650
Total	3,122	2,173
Helicopters	1,944	1,242
Fixed wing aircraft	1,178	931
Total	3,122	2,173
Missiles		
Army	29,530	42,896
Navy and Marine Corps	5,007	3,842
Air Force	3,982	2,400
Total—Missiles	38,519	49,138
Ships—Navy		
New Construction	8	19
Conversions	16	19
Total—Ships	24	38
Tracked Combat Vehicles		
Army	2,614	2,336
Marine Corps	5	160

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[1] Includes supplemental.

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Table No. 11 Department of Defense

MILITARY AND CIVILIAN PERSONNEL

Yearend Number

	FY 1967 actual	FY 1968 actual	FY 1969 estimate	FY 1970 estimate
Military Personnel				
Army				
Officers	143,425	166,016	171,288	171,711
Enlisted	1,296,619	1,401,727	1,359,562	1,332,546
Military Academy cadets	2,378	2,443	3,350	3,643
Total—Army	1,442,422	1,570,186	1,534,200	1,507,900
Navy				
Officers	81,677	85,200	84,860	86,419
Enlisted	665,226	675,441	681,697	680,838
Naval Academy midshipmen	4,399	4,591	4,243	4,243
Aviation cadets	92	—	—	—
Total—Navy	751,394	765,232	770,800	771,500
Marine Corps				
Officers	23,592	24,555	26,010	26,058
Enlisted	261,584	282,697	287,390	288,442
Aviation cadets	93	—	—	—
Total—Marine Corps	285,269	307,252	313,400	314,500
Air Force				
Officers	135,417	139,600	133,800	135,000
Enlisted	758,648	761,507	730,926	722,049
Air Force Academy cadets	3,361	3,652	3,874	4,151
Total—Air Force	897,426	904,759	868,600	861,200
Department of Defense—Total				
Officers	384,111	415,371	415,958	419,188
Enlisted	2,982,077	3,121,372	3,059,575	3,023,875
Academy cadets and midshipmen	10,138	10,686	11,467	12,037
Aviation cadets	185	—	—	—
Total—Defense	3,376,511	3,547,429	3,487,000	3,455,100
Civilian Personnel				
Army	436,830	437,932	468,229	469,717
Navy	402,513	419,546	415,249	415,264
Air Force	323,316	315,956	325,930	322,472
Defense Agencies/OSD	75,342	74,706	72,464	72,099
Total—Defense	1,238,001	1,248,140	1,281,872	1,279,552

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DEFENSE PROCUREMENT

Contracts of $1,000,000 and over awarded during the month of January 1969.

DEFENSE SUPPLY AGENCY

2—**Menominee Engineering Corp.,** Menominee, Mich. $2,982,317. 21,990 balk decks. Defense Construction Supply Center, Columbus, Ohio. DSA700–69–C–8640.

6—**MacShore Classic, Inc.,** New York, N.Y. $1,632,000. 600,000 men's cotton rip-stop poplin coats. Defense Personnel Support Center, Philadelphia, Pa. DSA100–69–C 1161.

—**Richard Wynn Enterprises, Inc.,** Knoxville, Tenn. $1,256,936. 482,800 men's cotton rip-stop poplin coats. Defense Personnel Support Center, Philadelphia, Pa. DSA100–69–C–1162.

8—**Armour Oil Co.,** San Diego, Calif. $2,425,-860. Fuel oil. Defense Fuel Supply Center, Alexandria, Va. DSA 600–69–D–0933.

15—**Texaco, Inc.,** New York, N.Y. $5,460,-250. Regular and premium gasoline. Defense Fuel Supply Center, Alexandria, Va. DSA600–69–D–0976.

—**Shell Oil,** New York, N.Y. $1,127,271. 967,-864 quarts of aircraft lubricating oil. Defense Fuel Supply Center, Alexandria, Va. DSA 600–69–C–1277.

—**West Point—Pepperell, Inc.,** New York, N.Y. $1,271,090. 701,000 linear yards of nylon ballistic cloth. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1220.

16—**Stauffer Chemical Co.,** New York, N.Y. $1,002,607. 50,112 eight-ounce cans; 845,-336 quarts, and 27,500 gallons of aircraft engine lubricating oil. Defense Fuel Supply Center, Alexandria, Va. DSA 600–69–C–1276.

—**Morton House Kitchens, Inc.,** Nebraska City, Neb. $2,302,722. 18,323,712 cans of baked items for combat rations. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–2176.

—**Rodana Research Corp.,** Bethesda, Md. $1,650,654. 2,500,992 atropine injections. Defense Personnel Support Center, Philadelphia, Pa. DSA 120–69–C–2102. ,

—**George Ziegler Co.,** Milwaukee, Wis. $1,-344,978. 36,646,101 candy disks for combat rations. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–66–C–Z172.

17—**Glenn's All American Sportswear, Inc.,** Amory, Miss. $1,643,125. 533,480 pairs of men's wind-resistant cotton trousers. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1215.

—**Tony Downs Foods Co.,** St. James, Minn. $1,238,711. 3,054,048 five-and-a-quarter-ounce cans of chicken and noodles and 2,885,184 five-and-a-quarter-ounce cans of boned turkey. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z164.

—**Tony Downs Food Co.,** St. James, Minn. $1,741,199. 5,523,360 cans of spiced beef. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z169.

—**Oscar Mayer & Co.,** Madison, Wis. $1,-097,121. 584,352 cans of spiced beef and 2,980,224 cans of beefsteak. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z171.

21—**Oscar Mayer & Co.,** Madison, Wis. $1,-750,780. 5,360,460 cans of sliced pork. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z179.

—**Coastal Foods,** Cambridge, Md. $1,040,134. 6,107,760 cans of beans with frankfurter chunks in tomato sauce. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z181.

—**Blue Star Foods, Inc.,** Council Bluffs, Iowa. $1,046,102. 3,054,240 cans of beef slices and potatoes with gravy. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z185.

22—**Menominee Engineering Corp.,** Menominee, Mich. $2,330,552. Eight sets of fixed floating bridges. Defense Construction Supply Center, Columbus, Ohio. DSA 700–69–C–8524.

23—**Electro Plastic Fabrics, Inc.** $3,301,500. 426,000 extra lightweight, camouflage pattern ponchos with hoods. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1132.

—**Otis Elevator Co.,** Cleveland, Ohio. $1,-352,545. 226 electric forklift trucks. Defense General Supply Center, Richmond, Va. DSA 400–69–B–1887.

24—**Oscar Mayer & Co.,** Madison, Wis. $1,773,-402. 6,107,712 cans of sliced ham. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z203.

27—**Tony Downs Food Co.,** St. James, Minn. $1,238,630. 3,053,856 five-and-one-quarter-ounce cans of chicken and noodles, and 2,884,992 five-and-three-quarter-ounce cans of boned turkey. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z216.

—**Franklin Clothes, Inc.,** Woodbine, N.J. $1,033,800. 60,000 men's tropical wool polyester coats. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1248.

—**Blue Star Foods, Inc.,** Council Bluffs, Iowa. $1,045,854. 3,053,520 cans of beef slices and potatoes and gravy. Defense Personnel Support Center, Philadelphia, Pa. DSA 130–69–C–Z211.

29—**Johnson & Johnson,** New Brunswick, N.J. $1,197,122. 439,736 packages of surgical sponges. Defense Personnel Support Center, Philadelphia, Pa. DSA 120–69–C–2203.

—**Guy H. James Industries, Inc.,** Midwest City, Okla. $1,177,374. 1,212,880 cotton sateen shirts. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1329.

—**Bonham Mfg. Co.,** Bonham, Tex. $1,181,-710. 355,000 coats. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1361.

—**Allen Overall Co.,** Monroe, N.C. $1,509,-600. 510,000 coats. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1362.

—**Burgess Mfg. Co.,** Cartersville, Ga. $1,-377,550. 459,880 coats. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1363.

31—**Glenn's All American Sportswear,** Amory, Miss. $2,225,962. 599,240 pairs of cotton trousers. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1382.

—**J. H. Rutter Rex., Mfg. Co.,** New Orleans, La. $1,322,000. 400,000 pairs of cotton trousers. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1380.

—**Tennessee Overall Co.,** Tullahoma, Tenn. $1,466,708. 321,120 pairs of cotton trousers. Defense Personnel Support Center, Philadelphia, Pa. DSA 100–69–C–1381.

CONTRACT LEGEND

Contract information is listed in the following sequence: Date—Company — Value — Material or Work to be Performed—Location of Work Performed (if other than company plant) — Contracting Agency—Contract Number.

DEPARTMENT OF THE ARMY

2—**Bogue Electric Mfg., Co.,** Paterson, N.J. $2,049,116 (contract modification). Generator sets. Mobility Equipment Command, St. Louis, Mo. DA 11–184–AMC–00864 (T).

—**Bolt, Beranek & Newmann, Inc.,** Cambridge, Mass. $1,077,727. Design and installation of interface message processors. Defense Supply Service, Washington, D.C. DA HC15–69–C–0179.

3—**Talley Industries, Inc.,** Mesa, Ariz. $3,-682,350. Metal parts for 4.2-inch projectiles. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0323.

—**Union Carbide Corp.,** New York. N.Y. $2,994,967. Dry batteries. Charlotte, N.C. Electronics Command, Philadelphia, Pa. DA AB05–69–C–3221.

—**Standard Container Co.,** Montclair, N.J. $2,423,742. Small arms ammunition packing boxes. Homerville, Ga. Frankford Arsenal, Philadelphia, Pa. DA AA25–69–C–0308.

—**Youngstown Steel Door Co.,** Elmira, N.Y. $2,371,731. Small arms ammunition packing boxes. Frankford Arsenal, Philadelphia, Pa. DA AA25–69–C–0307.

6—**System Development Corp.,** Santa Monica, Calif. $3,461,524 (contract modification). Continuation of research and development on the solution of the computer-aided-command problem. Defense Supply Service, Washington, D.C. DA HC15–67–C–0149.

—**Bell Helicopter Co.,** Fort Worth, Tex. $2,-435,625 (contract modification). UH–1H helicopters. Hurst, Tex. Aviation Materiel Command, St. Louis, Mo. DA AJ01–69–C–0028.

—**Whirlpool Corp.,** Evansville, Ind. $1,971,-913. 152mm canisters (XM626). Picatinny Arsenal, Dover, N.J. DA AA21–69–C–0363.

—**Northrop Corp.,** Anaheim, Calif. $1,475,-000. 152mm canisters (XM626). Picatinny Arsenal, Dover, N.J. DA AA21–69–C–0362.

—**Northeast Construction Co. of West Virginia,** Albuquerque, N.M. $2,642,348. Construction of 160 family housing units for NCOs at Fort Jackson, S.C. Engineer Dist., Savannah, Ga. DA CA21–69–C–0031.

—**AVCO Economics Systems Corp.,** Washington, D.C. $2,660,596. Renovation and production of ammunition components, and for installation of equipment at Glasgow AFB, Mont. Fort Detrick, Md. DA AA13–69–C–0064.

7—**Martin K. Eby Constrcution Co.,** Wichita, Kan. $2,783,625. Construction work and installation of government-furnished power equipment at the Stockton Reservoir, Sac River, Cedar County, Missouri, Project. Engineer Dist., Kansas City, Mo. DA CW 41—69–C–0057.

8—**Batesville Mfg. Co.,** Batesville, Ark. $3,-211,600 (contract modification). Metal parts (M904E2) for fuzes for 750-lb. bombs. Army Procurement Agency, Chicago, Ill. DA AA09–69–C–0069.

—**Delco Remy Div., General Motors Corp.,** Anderson, Ind. $2,691,979. 12-volt storage batteries for general vehicle application. Anaheim, Calif. Tank Automotive Command, Warren, Mich. DA AE07–69–C–1946.

—**Philco Ford Corp.,** Willow Grove, Pa. $1,935,263 (contract modification). Operation and maintenance services in Saigon and at Okinawa sites for one year. Electronics Command, Fort Monmouth, N.J. DA 36–039–AMC–05589 (E).

9—**Temco, Inc.,** Nashville, Tenn. $2,387,000. Metal parts for 4.2-inch projectiles. Army Procurement Agency, Chicago, Ill. DA AA09–69–C–0082.

—**Honeywell, Inc.,** North Hopkins, Minn. $1,316,250 (contract modification). Bomblet fuzes. New Brighton, Minn. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–68–C–0490.

—**Technical Operations,** Burlington, Mass. $1,300,000 (contract modification). 1,333 man-months of scientific, technical and support effort for studies for the Combat Development Command, Fort Belvoir, Va. Alexandria, Va. Army Procurement Agency Oakland, Calif. DA AG05–67–C–0547.

10—**Goodyear Tire & Rubber Co.,** Akron, Ohio. $1,131,488 (contract modification). Pneumatic tires for 2½-ton and 5-ton trucks. Gadsden, Ala. Tank Automotive Command, Warren, Mich. DA AE07–69–C–1273.

—**Maremont Corp.,** Saco, Maine. $3,183,648. M60 machine guns, barrel assemblies and bi-pods. Army Weapons Command, Rock Island, Ill. DA AF03–69–C–0050.

—**United Aircraft,** Windsor, Locks, Conn. $1,658.505. Propeller systems for OV–1D aircraft, related data reports and technical publications. Aviation Systems Command, St. Louis, Mo. NO0383–67–A–1901.

—**Honeywell, Inc.,** Hopkins, Minn. $1,515,000. Delay plungers with point detonating fuzes for 105mm projectiles. New Brighton, Minn. Army Procurement Agency, Chicago, Ill. DA AA09–69–C–0191.

—**Standard Products,** Cleveland, Ohio. $1,502,933. Track shoe assemblies for M114 personnel carriers. Port Clinton, Ohio. Tank Automotive Command, Warren, Mich. DA AE07–69–C–2023.

—**Hughes Tool Co.,** Culver City, Calif. $1,043,169 (contract modification). Product improvement on the OH–6A helicopter. Aviation Systems Command, St. Louis, Mo. DA AJ01–68–C–1123.

—**Chrysler Corp.,** Huntsville, Ala. $2,943,550. Second source production of the TOW missile. Army Missile Command, Huntsville, Ala. DA AH01–69–C–0928.

14—**Olin Mathieson Chemical Corp.,** East Alton, Ill. $9,222,528. 7.62mm, 5.56mm and 20mm ammunition propellant. Frankford Arsenal, Philadelphia, Pa. DA AA25–69–C–0318.

—**Motorola, Inc.,** Scottsdale, Ariz. $2,000,000. Classified electronics equipment. Electronics Command, Fort Monmouth, N.J.

—**North American Rockwell, Anaheim, Calif.** $1,080,000. Classified work. Sentinel Systems Command, Huntsville, Ala. DA HC-60–69–C–0046.

15—**Fruin-Colnon,** St. Louis, Mo. $3,164,075. Construction of three additional wings to the existing composite medical facility at Scott AFB, Ill. Engineer Dist., Chicago, Ill. DA CA23–69–C–0056.

—**Hayes Albion Corp.,** Albion, Mich. $2,052,000. Metal parts for 2.75-inch rocket warheads. Albion and Hillsdale, Mich. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0332.

—**Uniroyal, Inc.,** Detroit, Mich. $1,795,705 (contract modification). Pneumatic tires for 2½-ton and 5-ton trucks. Los Angeles, Calif.; Chicopee Falls, Mass. and Detroit, Mich. Tank Automotive Command, Warren, Mich. DA AE07–69–C–1274.

—**Fairchild Camera,** Copiague, N.Y. $1,403,325. Production engineering of ZM579 fuzes. Picatinny Arsenal, Dover, N.J. DA AA21–69–C–0348.

—**Parsons Mfg: & Stamping Co.,** Cordova, Tenn. $1,245,438. Rotating discs for 4.2-inch obturating assemblies. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0329.

16—**Texas Instruments, Inc.,** Dallas, Tex. $1,500,000 (contract modification). Classified work. Electronics Command, Fort Monmouth, N.J.

17—**Ranger Construction Co.,** Huntsville, Ala. $2,730,533. Construction of 170 family housing units with supporting utilities at Redstone Arsenal, Ala. Engineer Dist., Mobile, Ala. DA CA01–69–C–0022.

—**J. W. Bateson,** Dallas, Tex. $7,628,400. Construction of 448 family housing units with supporting utilities at Fort Gordon, Ga. Engineer Dist., Savannah, Ga. DA CA21–69–C–0055.

—**Algernon Blair, Inc.,** Montgomery, Ala. $2,820,000. Construction of a reception processing building and supporting utilities at Fort Jackson, S.C. Engineer Dist., Savannah, Ga. DA CA21–69–C–0054.

—**Southwide Construction Co.,** Augusta, Ga. $2,084,858. Construction of 120 family housing units and supporting utilities at Fort Stewart, Ga. Engineer Dist., Savannah, Ga. DA CA21–69–C–0050.

21—**Olin Mathieson Chemical Corp.,** New Haven, Conn. $1,173,384 (contract modification). .45 cal. cartridges. East Alton, Ill. and New Haven. Frankford Arsenal, Philadelphia, Pa. DA AA25–69–C–0220.

22—**Morrison Knudsen Co.,** New York, N.Y. $2,213,857. Phase II construction of Boston Perimeter Acquisition Radar for Sentinel System Command. Sharpeners Pond Site, Mass. Engineer Dist., Huntsville, Ala. DA CA87–69–C–0010.

—**Packard Bell Electronics Corp.,** Newbury Park, Calif. $1,262,810. Transponder test sets (AN/AMP–123 (V) 122M3) for radio receivers. Army Procurement Agency, Pasadena, Calif. DA AG07–69–C–0430.

23—**Firestone Tire & Rubber Co.,** Akron, Ohio. $5,471,754. Track shoe assemblies for M48 and M60 tanks. Tank Automotive Command, Warren, Mich. DA AE07–69–C–2209.

—**Southwest Truck Body Co.,** St. Louis, Mo. $1,135,083. Shop equipment for general purpose repair. West Plains, Mo. Mobility Equipment Command, St. Louis, Mo. DA AK01–68–C–2287.

—**Western Electric,** New York, N.Y. $2,718,674 (contract modification). Task and skill analysis for the Sentinel Training Program. Sentinel Systems Command, Huntsville, Ala. DA HC– 60–69–C–0010.

—**Chamberlain Mfg. Corp.,** Elmhurst, Ill. $3,752,089 (contract modification). 105mm Cartridge cases (M1481) Burlington, N.J. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0182.

—**Franchi Construction Co.,** Newton, Mass. $6,822,000. Construction of a 116-bed Army hospital at Fort Devens, Ayer, Mass. New England Division, Corps of Engineers. DA CA33–69–C–0024.

—**Lockheed Aircraft Service Corp.,** Lake Charles, La. $1,846,000. Inspection, and repair as necessary, of 130 UH–1D aircraft. Aviation Systems Command, St. Louis, Mo. DA AJ01–69–C–0029.

—**E. I. DuPont de Nemours & Co.,** Wilmington, Del. $2,255,400. 12,600,000 pounds of flaked TNT. Barksdale, Wis. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0327.

24—**Peace Corp.,** Memphis, Tenn. $5,008,400 (contract modification). White Star parachute signals (M127A1). Camden, Ark. and Memphis, Tenn. Picatinny Arsenal, Dover, N.J. DA AA21–69–C–0327.

—**AAI Corp.,** Cockeysville, Md. $1,380,000. AN/MPQ–P1 simulators for the Nike Hercules missile system. Army Missile Command, Huntsville, Ala. DA AH01–69–C–1002.

—**Matich Bros.,** Rialto, Calif. $1,048,300. Construction of an airfield parking apron at Norton AFB, Calif. Engineer Dist., Los Angeles, Calif. DA CA09–69–C–0113.

—**Brunswick Corp.,** Sugargrove, Va. $3,529,680. Riot control agent (CS) filled 35mm cartridge launchers, 16-tubes (E–8). Edgewood Arsenal, Md. DA AA15–69–C–0349.

—**Atlantic Research Corp.,** West Hanover, Mass. $3,032,778. CS filled 35mm cartridge launchers, 16 tubes (E–8). Edgewood Arsenal, Md. DA AA15–69–C–0350.

—**Northern Nortronics,** Hawthorne, Calif. $1,303,581. AN/ASH–19 voice warning systems for CH–47 Chinook and OV–1 Mohawk helicopters. Electronics Command, Fort Monmouth, N.J. DA AB07–68–C 0467.

—**Keystone Mfg. Corp.,** Dorchester, Mass. $1,426,396. Delay plungers for 105mm shells. Army Procurement Agency, Chicago, Ill. DA AA09–69–C–0206.

—**Harvey Aluminum,** Torrance, Calif. $1,530,317. 40mm cartridge cases. Army Procurement Agency, Pasadena, Calif. DA AA09–69–C–0178.

—**James Leck Co.,** Minneapolis, Minn. $1,674,000. Construction of a primer mix facility at New Brighton, Minn. Engineer Dist., Chicago, Ill. DA CA23–69–C–0047.

27—**Kollsman Instrument Corp.,** Elmhurst, N.Y. $2,538,621. Firing devices for M57 mines. Bridgeport, Conn. Picatinny Arsenal, Dover, Del. DA AA21–69–C–0422.

—**Norris Industries,** Vernon, Calif. $1,827,131. 105mm cartridge cases. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0337.

—**Martin Marietta Corp.,** Orlando, Fla. $1,600,000 (contract modification). A Pershing improvement program. Army Missile Command, Huntsville, Ala. DA AH01–69–C–0863.

28—**Bell Aerospace Corp.,** Fort Worth, Tex. $1,810,715. Rotary wing blades. DA AJ01–68–A–0022. $1,470,490. Main tail rotor hubs. DA AJ01–68–A–0022. Hurst, Tex. Aviation Systems Command, St. Louis, Mo.

—**Douglas & Lomason Co.,** Columbus, Ga. $1,343,792 (contract modification). Fragmentation bombs, and adapter clusters for 100-lb. fragmentation bombs. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0125.

—**Susquehanna Corp.,** West Hanover, Mass. $1,125,210. 2.75-inch motor igniters. Picatinny Arsenal, Dover, N.J. DA AA21–69–C–0423.

29—**Goodyear Tire & Rubber Co.,** Akron, Ohio. $5,843,806. T130 track shoe assemblies used on M113A1 personnel carriers. St. Mary's, Ohio. Tank Automotive Command, Warren, Mich. DA AE07–69–C–2264.

—**Sun Battery Co.,** Santa Ana, Calif. $1,436,444. Storage batteries. Tank Automotive Command, Warren, Mich. DA AE07–69–C–2248.

—**Goodyear Tire & Rubber Co.,** Akron, Ohio. $1,248,008. T84E1 track shoe assemblies for M53 howitzers. St. Mary's, Ohio. DA AE07–69–C–2259.

30—**Remington Arms, Inc.,** Bridgeport, Conn. $22,274,870. Manufacture of small arms ammunition. Independence, Mo. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 49–010–AMC–00003 (A).

—**Olin Mathieson Chemical Corp.,** New York, N.Y. $14,127,745. Load, assemble and pack propellants and related ammunition components. Charlestown, Ind. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11–173–AMC–00097 (A).

—**Federal Cartridge Corp.,** Minneapolis, Minn. $13,236,510. Production of small arms ammunition. New Brighton, Minn. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 36–038–AMC-01099 (A).

—**Day & Zimmermann, Inc.,** Philadelphia, Pa. $10,274,955. Load, assemble and pack ammunition. Texarkana, Tex. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11–173–AMC–00114 (A).

—**Firestone Tire & Rubber Co.,** Ravenna, Ohio. $5,273,420. Load, assemble and pack ammunition and related components. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11–173–AMC–00065 (A).

—**Eastman Kodak Co.,** Kingsport, Tenn. $1,079,736. Manufacture explosives. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11–173–AMC–00035 (A).

—**Kaiser Jeep Corp.,** Toledo, Ohio. $12,985,294 (contract modification). 2½-ton trucks. South Bend, Ind. Project Manager, General Purposes Vehicles, Michigan Army Missile Plant, Warren, Mich. DA AE06 68–C–0007.

—**Continental Motors.** Muskegon, Mich. $3,386,099 (contract modification). Three and six horsepower military standard engines. Milwaukee, Wis. Mobility Equipment Command, St. Louis, Mo. DA 23–195–AMC–00808 (T).

—**Page Communications Engineers,** Washington, D.C. $2,183,615. Recoverable microwave terminals for use with the Integrated Wide Band Communications System. Electronics Command, Fort Monmouth, N.J. DA AB07–69–C–0197.

—**Caronis, Construction Co.,** Winchester, Mass. $1,683,000. Construction of a special computation laboratory at L. G. Hanscom Field, Mass. New England Engineer Div., Waltham, Mass. DA CA33–69–C–0025.

—**Raytheon Co.,** Norwood, Mass. $1,428,949 (contract modification). Multiplexers and spare parts kits. North Dighton, Mass. Electronics Command, Philadelphia, Pa. DA AB05–69–C–1012.

—**AVCO Corp.,** Richmond, Ind. $1,124,750. Metal parts for adapter boosters for 750-lb. bomb tail fuzes. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09–69–C–0348.

31—**Motorola, Inc.,** Scottsdale, Ariz. $7,587,000. Radar surveillance sets for OV–1D Mohawk aircraft. Electronics Command, Fort Monmouth, N.J. DA AB07-68-C-0419.

—**Texas Instruments, Inc.**, Dallas, Tex. $5,-721,660 (contract modification). Classified work. Mobility Equipment Research & Development Command, Fort Belvoir, Va. DA AK02-68-C-0541.

—**R&D Constructiors, Inc.**, Park Ridge, Ill. $3,725,429. Design and construction of a fuel supply system and a field maintenance hangar for the C-5A aircraft. Dover AFB, Del. Engineer Dist., Baltimore, Md. DA CA31-69-C-0050.

—**General Electric**, Burlington, Vt. $3,106,-652. Aircraft machine guns. Springfield, Mass. and Burlington, Vt. Army Weapons Command, Rock Island, Ill. DA AF03-69-C-0042.

—**Northrop Nortronics**, Hawthorne, Calif. $2,549,666 (contract modification). Voice warning systems for Chinook and Mohawk helicopters. Electronics Command, Fort Monmouth, N.J. DA AB07-68-C-0467.

—**Scoville Mfg. Co.**, Waterbury, Conn. $2,-410,337. Bomblet fuzes. Army Procurement Agency, Chicago, Ill. DA AA09-69-C-0141.

—**Bell Aerospace Corp.**, Tucson, Ariz. $1,-787,074 (contract modification). Services required for the continuous operation, maintenance, future development and modernization of the Electro Magnetic Environmental Test Facility. Vail, Ariz. Procurement Div., Army Garrison, Fort Huachuca, Ariz. DA 02-086-AMC-0212 (R).

—**Sperry Rand Corp.**, Phoenix, Ariz. $1,267,-302. Gyromagnetic compass sets. Army Procurement Agency, Pasadena, Calif. DA AG07-69-C-0436.

—**Aerojet General Corp.**, Downey, Calif. $1,-214,986. 2.75-inch rocket warheads. Fullerton, Calif. Army Procurement Agency, Pasadena, Calif. DA AA09-69-C-0134.

—**Waukesha Motor Co.**, Waukesha, Wis. $1,-157,870. Generator sets. Mobility Equipment Command, St. Louis, Mo. DA AK 01-69-C-5228.

—**Triangle Electronic Mfg. Co.**, Poughkeepsie, N.Y. $1,094,401. Cable assemblies and adapter assemblies. Electronics Command, Philadelphia, Pa. DA AB05-69-C-1023.

—**Temco, Inc.**, Nashville, Tenn. $1,071,084 (contract modification). Metal parts for 106mm projectiles. Army Procurement Agency, Chicago, Ill. DA AG11-69-C-0224.

—**AVCO Corp.**, Richmond, Ind. $1,056,645. Metal parts for hand grenades. Army Procurement Agency, Cincinnati, Ohio. DA AA09-69-C-0258.

—**Mason & Hanger—Silas Mason Co.**, New York, N.Y. $14,569,505. (contract modification). Load, assemble and pack bombs and ammunition items, and for support services. Grand Island, Neb. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09-68-C-0383.

—**Mason & Hanger—Silas Mason Co.**, New York, N.Y. $7,761,807 (contract modification). Load, assemble and pack ammunition items and components. Burlington, Iowa. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09-68-C-0468.

—**AVCO Corp.**, Richmond, Ind. $6,001,016. Classified components of the 155mm projectile. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09-69-C-0339.

—**Olin Mathieson Chemical Corp.**, New York, N.Y. $4,493,226 (contract modification). Production of propellants and for support services. Baraboo, Wis. Ammunition Procurement & Supply Agency, Joliet, Ill. DA AA09-69-C-0014.

—**Hercules, Inc.**, Wilmington, Del. $1,113,-695 (contract modification). Manufacture of propellants. Lawrence, Kan. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11-173-AMC-00042 (A).

—**Chamberlain Mfg. Corp.**, Elmhurst, Ill. $1,089,811 (contract modification). Body assemblies for 8-inch projectiles. Scranton, Pa. Ammunition Procurement & Supply Agency, Joliet, Ill. DA 11-173-AMC-00614 (A).

—**EMCO Porcelain Enamel Co.**, Port Chester, N.Y. $3,800,000. Ammunition boxes. Frankford Arsenal, Philadelphia, Pa. DA AA-25-69-C-0236.

—**Remington Arms Corp.**, Bridgeport, Conn. $2,900,000 (contract modification). 7.62mm linked ammunition. Frankford Arsenal, Philadelphia, Pa. DA AA25-69-C-0088.

Olin Mathieson Chemical Corp., New Haven, Conn. $2,167,680 (contract modification). 7.62mm clipped ammunition. Frankford Arsenal, Philadelphia, Pa. DA AA25-69-C-0090.

Olin Mathieson Chemical Corp., East Alton, Ill. $1,647,046 (contract modification). 7.62mm linked ammunition. Frankford Arsenal, Philadelphia, Pa. DA AA25-69-C-0089.

—**Stevens Mfg. Co.**, Ebensburg, Pa. $3,549,-550. 1½-ton trailers to transport potable water. Tank Automotive Command, Warren, Mich. DA AE07-69-C-1461.

—**General Motors**, Warren, Mich. $3,199,290. M-60 transmission assemblies. Tank Automotive Command, Warren, Mich. DA AE07-68-C-2806.

—**Chrysler Motors**, Warren, Mich. $1,600,-177. One-ton cargo trucks and one-ton ambulances. Tank Automotive Command, Warren, Mich. DA AE07-69-C-0771.

—**Charles Otsuka, Inc.**, Honolulu, Hawaii. $1,298,627. Construction of an airmen's dormitory at Hickam AFB, Hawaii. Engineer Dist., Honolulu, Hawaii. DA CA83-69-C-0014.

—**Christianson-Kaber-Kief & Associates, Inc., and B-E-C-K Construction Co.**, Seattle, Wash. $1,709,020. Construction of an airmen's dormitory and repairs to existing buildings at Shemya AFS, Alaska. Engineer Dist., Anchorage, Alaska. DA CA85-69-C-0036.

DEPARTMENT OF THE NAVY

2—**Lockheed Aircraft Corp.**, Burbank, Calif. $1,500,000. Sustaining effort for the VSX weapon system. Naval Air Systems Command. N00019-69-C-0354.

—**General Dynamics Corp.**, San Diego, Calif. $1,499,915. Sustaining effort for the VSX weapon system. Naval Air Systems Command. N00019-69-C-0338.

—**Varo, Inc.**, Garland, Tex. $1,473,710. MAU 9A/A ejector bomb racks. Naval Air Systems Command. N00019-69-C-0320.

—**Woods Hole Oceanographic Institution**, Woods Hole, Mass. $1,191,343. Additional oceanographic studies. Office of Naval Research.

3—**General Dynamics Corp.**, Pomona, Calif. $11,618,136. FY 1969 production of Standard Arm missiles. Naval Air Systems Command. N00019-69-C-0336.

—**Computer Sciences Corp.**, El Segundo, Calif. $4,807,178. Automatic data processing, data reduction, data assessment and related services as ordered by the Naval Undersea Warfare Center, Pasadena, Calif. Navy Purchasing Office, Los Angeles, Calif. N00123-69-C-0290.

—**General Electric Co.**, Washington, D.C. $1,-412,135. Polaris MK1 and MK2 guidance system tactical engineering. Pittsfield, Mass. Strategic Systems Project Office. N00030-69-C-0153.

—**Vocaline Co. of America**, Saybrook, Conn. $1,336,447. Sonobuoy, bathythermograph transmitter set and underwater sound signal testing. South Bristol, Maine. Naval Air Systems Command. N00019-69-C-0179.

—**Collins Radio**, Cedar Rapids, Iowa. $1,036,-867. Launch control sub-systems and engineering support in the SECT program. Naval Ordnance Laboratory, White Oak, Silver Spring, Md. N60921-69-C-0121.

—**Dayton Electronic Products Co.**, Dayton, Ohio. $2,156,498. Manufacture of shipboard transceivers. Naval Electronic Systems Command, N00039-C-1553.

6—**PRD Electronics, Inc.**, Jericho, N.Y. $10,-231,000. VAST (Versatile Avionics Shop Test Equipment) test stations for A-7E aircraft. Naval Air Systems Command. N00019-69-C-0334.

—**Todd Shipyards Corp.**, San Pedro, Calif. $1,194,551. Regular overhaul of the oiler USS Guadalupe (AO-32). Supervisor of Shipbuilding, Conversion and Repair, 11th Naval Dist., Long Beach, Calif. N62791-69-B-0032 (Job Order 11ND-112-69).

7—**Radio Corp. of America, Van Nuys, Calif.** $1,974,750. MK 93 proximity fuzes for 5-inch Zuni rockets. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00104-69-C-0202.

—**Bethlehem Steel Corp.**, East Boston, Mass. $1,995,215. Topside alteration and repair of the oiler USS Severn (AO-61). Supervisor of Shipbuilding, Conversion and Repair, 1st Naval Dist., Boston, Mass. IFB N62665-69-B-33 (Job Order No. 35).

—**Collins Radio Co.**, Cedar Rapids, Iowa. $2,-389,980. Classified Electronic Countermeasure (ECM) equipment for the Navy and the Air Force. Naval Air Systems Command. N00019-69-C-0180.

8—**Raytheon Co.**, Lexington, Mass. $31,177,-850. Guidance and control groups for Sparrow III missiles for the Navy and Air Force. Lowell, Mass.; Bristol, Tenn. and Oxnard, Calif. Naval Air Systems Command, N00019-69-C-0358.

9—**Sperry Rand Corp.**, Syosset, N.Y. $5,-800,000. Poseidon navigation trainers conversion at the Guided Missile School, Dam Neck, Va., and at the Fleet Ballistic Missile Submarine Training Center, Charleston, S.C.; and for retrofit of Polaris navigation trainers at the Fleet Submarine Training Facility, Pearl Harbor, Hawaii. Strategic Systems Project Office. N00030-69-C-0012.

—**Sperry Gyroscope Div., Sperry Rand Corp.**, Great Neck, N.Y. $1,000,000. Fifteen Ships Inertial Navigation Systems (SINS). Naval Ship Systems Command. N00024-69-C-5290.

10—**Curtiss Wright Corp.**, Wood-Ridge, N.J. $1,508,371. Spare parts for R1820/80/-82/84/86 aircraft engines. Aviation Supply Office, Philadelphia, Pa. F41608-69-A-0057-GB35.

—**Banner Metals, Inc.**, Compton, Calif. $1,-110,871. MK 11, MOD 1, pallet adapters, and spare parts. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00104-69-C-0214.

13—**Stromberg Datagraphics**, San Diego, Calif. $2,581,715. Airborne tactical display systems. Naval Air Systems Command. N00019-69-C-0302.

—**Grumman Aircraft Engineering Corp.**, Bethpage, N.Y. $2,565,300. Building maintenance at the Naval Weapons Industrial Reserve Plant. Naval Air Systems Command. N00019-69-C-9020.

—**Sanders Associates, Inc.**, Nashua, N.H. $1,840,539 (contract modification). Repair and modification of electronic countermeasure equipment. Naval Air Systems Command. N00019-67-C-0614.

—**Systron-Donner Corp.**, Concord, Calif. $1,-332,577. Counting type accelerometer groups. Naval Air Systems Command. N00019-69-C-0374.

14—**McDonnell Douglas Corp.**, Long Beach, Calif. $7,101,216 (contract modification). Extension of long lead time effort and materials for FY 1969 procurement of TA-4F aircraft. Naval Air Systems Command. N00019-67-C-0170.

15—**University of Rochester**, Rochester, N.Y. $9,025,736. Research of problems associated with the mission of the Navy Rochester, N.Y. and Arlington, Va. Office of Naval Research.

—**Maxon Electronics Corp.**, Macon, Ga. $4,-869,449. MK 83, MOD O, base fuses for 5-inch 38-cal. projectiles. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00-104-69-C-0142.

—**Sanders Associates**, Nashua, N.H. $1,861,-757. Classified electronics equipment. Naval Air Systems Command. N00019-69-C-0331.

—**General Dynamics**, Groton, Conn. $2,000,-000. Advanced planning and design of conversion support for SSBN submarines. Naval Ship Systems Command. N00024-69-C-0271.

—**Uniflite, Inc.**, Bellingham, Wash. $1,035,-165. Twenty-two 31-foot patrol boats. Naval Ship Systems Command. N00024-69-C-0276.

—**Sperry Rand Corp.**, Syosset, N.Y. $1,000,-000. Nuclear submarine inertial navigation subsystems components. Naval Ship Systems Command. N00024-69-C-5300.

16—**Magnavox Co.**, Fort Wayne, Ind. $6,542,-299. Sonobuoys. Naval Air Systems Command. N00019-69-C-0381.

—**Vitro Corp.**, Fort Walton Beach, Fla. $2,-145,127. Shipboard hydrographic data acquisition systems. Naval Oceanographic Office, Suitland, Md. N62306-69-C-0095.

—**LTV Aerospace Corp.**, Dallas, Tex. $1,200,000. Facilities maintenance at the Naval Weapons Industrial Reserve Plant, Dallas, Tex. Naval Air Systems Command. N00019–69–C–0004.

—**Ames-Ennis, Inc.**, Baltimore, Md. $5,504,000. Construction of 300 family housing units at the Naval Air Training Center, Patuxent River, Md. Chesapeake Div., Naval Facilities Engineering Command, Washington, D.C. N62477–68–B–0056.

—**Iannuccillo Construction Co.**, Central Falls, R.I. $5,244,000. Construction of 300 family housing units at the Naval Complex, Newport, R.I. Northeast Div., Naval Facilities. Engineering Command. Boston, Mass. N62464–67–C–0419.

—**Pacific Venture, Inc.**, Seattle, Wash. $1,557,160. Construction of 100 family housing units at the Naval Shipyard, Bremerton, Wash. Northwest Div., Naval Facilities Engineering Command, Seattle, Wash. N62476–69–C–0052.

17—**General Dynamics**, Groton, Conn. $10,779,863. Materials and equipment required for regular overhaul and C3 Poseidon missile conversion of nuclear submarines. Naval Ship Systems Command. N00024–68–C–0203 Mod. PZ07.

22—**Morgen & Oswood Consuction Co. and Lowe Construction Co.**, Great Falls, Mont. $1,894,400. Construction of a 500-man receiving barracks and a 350-man staff barracks at the Naval Training Center, Orlando, Fla. Southeast Div., Naval Facilities Engineering Command, Orlando, Fla. N62467–67–C–0296.

—**Hazeltine Corp.**, Little Neck, N.Y. $1,575,000. Classified electronic equipment. Naval Air Systems Command. N00019–69–C–0396.

—**D. R. Kincaid Co.**, Honolulu, Hawaii. $1,422,819. Construction of five 1-story reinforced concrete buildings to replace typhoon damaged or destroyed facilities at the Air Force Station, Wake Island. Mid-Pacific Div., Naval Facilities Engineering Command, Honolulu, Hawaii. N62471–69–B–0321.

—**University of Alaska**, College, Alaska. $1,210,000. Additional research in Arctic problems. Office of Naval Research.

—**RCA**, Van Nuys, Calif. $1,139,040. MK 25, MOD 0, monitor fuses. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00104–69–C–0222.

—**Meadow Gold Dairies**, Hawaii Ltd., Honolulu, Hawaii. $1,060,429. Dairy products for general mess issue. Navy Supply Center, Pearl Harbor, Hawaii. N00604–69–D–0248.

23—**Sanders Associates**, Nashua, N.H. $8,467,619. Sonobuoys. Naval Air Systems Command. N00019–69–C–0397.

—**Honeywell, Inc.**, Minneapolis, Minn. $2,080,549. Altimeter sets and associated equipment. Naval Air Systems Command. N00019–69–C–0388.

24—**McDonnell Douglas Corp.**, St. Louis, Mo. $12,000,000. Long lead time effort and materials to support procurement of F–4E and RF–4G aircraft for the Air Force. Naval Air Systems Command. N00019–68–C–0495.

—**Diesel Service Center, Inc.**, Long Beach, Calif. $1,800,000. Overhaul and repair of engines for landing craft and small boats. Navy Purchasing Office, Los Angeles, Calif. N00123–69–C–1113.

27—**Norfolk Shipbuilding & Drydock Corp.**, Norfolk, Va. $1,062,000. Regular overhaul of the landing ship, tank USS Walworth County (LST–1164). Supervisor of Shipbuilding, Conversion and Repair, Fifth Naval Dist., Norfolk, Va. N62678–67–C–0018.

28—**Collins Radio Corp.**, Cedar Rapids, Iowa, $4,613,421. AN/ARC–51 aircraft radio sets. Aviation Supply Office, Philadelphia, Pa. N00383–69–C–2038.

—**Stewart Warner Electronics**, Chicago, Ill. $1,321,905. Components and lower assemblies of AN/APG–53A ground clearance radar equipment for A–4 aircraft. Aviation Supply Office, Philadelphia, Pa. N00383–69–C–2016.

—**Lear-Siegler, Inc.**, Grand Rapids, Mich. $1,281,732. Components of the AJB–3 loft bomb release computer set. Aviation Supply Office, Philadelphia, Pa. N00383–69–C–2017.

—**North American Rockwell Corp.**, McGregor Tex. $1,253,632 (contract modification). Rocket motors for Shrike and Sparrow missile. Naval Air Systems Command. N00019–69–C–0215.

—**Sperry Rand Corp.**, St. Paul, Minn. $1,075,854. Naval Tactical Data System design, engineering, programming and documentation for DLG(N) 36 now under construction at Newport News, Va. Naval Ship Systems Command. N00024–69–C–1125.

29—**General Electric**, Washington, D.C. $4,934,000. MK 88 fire control systems and related materiels for use on Phase II Poseidon missiles. Pittsfield, Mass. Strategic Systems Project Office. N00030–66–C–0166.

—**Lansdowne Steel & Iron Corp.**, Morton, Pa. $2,888,172. MK 51 projectiles. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00104–69–C–0258.

30—**McDonnell Douglas Corp.**, St. Louis, Mo. $16,800,000 (contract modification). F–4J and RF–4B aircraft. Naval Air Systems Command. N00019–68–C–0495.

—**RCA**, Van Nuys, Calif. $2,200,000. Classified electronic counter-measures equipment. Naval Ship Systems Command. N00024–69–C–1194.

—**Kaman Corp.**, Bloomfield, Conn. $1,255,652 (contract modification). Modification of UH–2A/B helicopters to a twin engine configuration designated UH–2C. Naval Air Systems Command. N00019–69–C–0066.

31—**Goodyear Aerospace Corp.**, Akron, Ohio. $10,688,390. SUBROC missiles. Naval Ordnance Systems Command. N00017–69–C–1407.

—**Raymond Engineering, Inc.**, Middletown, Conn. $3,560,850. MK 346, Mod O, bomb fuzes. Navy Ships Parts Control Center, Mechanicsburg, Pa. N00104–69–C–0232.

—**Columbia University**, New York, N.Y. $1,606,035. Marine geophysics research. Office of Naval Research.

DEPARTMENT OF THE AIR FORCE

2—**Sylvania Electric Products, Inc.**, Needham Heights, Mass. $3,000,000 (contract modification). Support of ground electronics systems. Space & Missile Systems Organization (AFSC), Los Angeles, Calif. F04694–67–C–0050.

3—**Boeing Co.**, Seattle, Wash. $5,000,000. Force modernization program of Minuteman Wing III. Minot, N.D. Space & Missile Systems Organization (AFSC), Los Angeles, Calif. F04701–68–C–0288.

—**McDonnell Douglas Corp.**, Santa Monica, Calif. $1,200,000. Study and fabrication of improved heat shields and nose tips for advanced ballistic missile reentry systems. Space & Missile Systems Organization (AFSC), Los Angeles, Calif. F04701–68–C–0288.

—**Boeing Co.**, Seattle, Wash. $1,112,750. Installation and checkout of UHF antennae and radios for Minuteman Wing VI. Grand Forks AFB, N.D. Space & Missile Systems Organization (AFSC), Los Angeles, Calif. F04701–68–C–0160.

—**McDonnell Douglas Corp.**, St. Louis, Mo. $4,000,000. Modification of RF–4 aircraft. Robertson, Mo. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F34601–68–A–2919.

—**Battelle Memorial Institute**, Columbus, Ohio. $1,000,000. Continued operation of the Defense Metals Information Center. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33615–69–C–1343.

6—**Litton Systems, Inc.**, Woodland Hills, Calif. $3,750,507. Production of instrument spare parts to support the LN16 inertial navigation system applicable to RC–135 and DC–130 aircraft. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla. F04606–68–A–0147.

—**United Aircraft Corp.**, East Hartford, Conn. $1,078,564. Production of modification kits applicable to J57 and J59 aircraft engines. San Antonio Air Materiel Area. (AFLC), Kelly AFB, Tex. N383–6900A.

—**Greenhut Construction Co.**, Pensacola, Fla. $1,405,000. Construction of 100 family housing units. Biloxi, Miss. Keesler AFB, Miss. F22600–69–C–0156.

7—**Electronic Communications, Inc.**, St. Petersburg, Fla. $1,225,000. Engineering, fabrication of kits, data and spares for UHF airborne teletype terminals for EC–135 aircraft. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla. F34601–69–C–1333.

—**Lasko Metal Products, Inc.**, West Chester, Pa. $8,238,430. Production of bomb fin assemblies. Armament Development & Test Center, (AFSC), Eglin AFB, Fla. F-08635–69–C–0025.

9—**United Aircraft Corp.**, Hartford, Conn. $1,292,497. Production of forgings for J57 aircraft engines. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex. N383–69000A.

10—**Lockheed Aircraft**, Marietta, Ga. $37,083,220. C–130E aircraft, spare parts, and aerospace ground equipment. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–69–C–0249 (P001).

—**Westinghouse Electric**, Baltimore, Md. $1,885,000. Classified space hardware. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–68–C–0269.

—**General Electric**, West Lynn, Mass. $5,500,000 CY 1969 component improvement for J85/T58 aircrat engines. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–69–C–0385.

13—**Martin Marietta Corp.**, Baltimore, Md. $2,639,308. Production of modification kits for F101 aircraft. Middle River, Md. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–1141.

—**U.S. Steel**, Pittsburgh, Pa. $2,396,040. Production of bomb component. McKeesport, Pa .Armament Development Test Center, Eglin AFB, Fla. F09635–69–C–0026.

—**Philco Ford Corp.**, Palo Alto, Calif. $3,918,639. Operation and maintenance of a tracking station at Grenier AFS, N.H. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0056.

—**Radiation, Inc.**, Melbourne, Fla. $1,986,000. Production of communications equipment. Palm Bay, Fla. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0020.

—**Dell Industries**, Waycross, Ga. $1,189,977. Production of practice bombs. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–2546.

14—**United Aircraft**, East Hartford, Conn. $4,063,095. Production of modification kits for J–57 aircraft engines. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex. N383–69000A.

—**I. T. & T.**, Nutley, N.J. $3,608,897. Production of aerospace ground equipment for an airborne radio navigational system. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–67–C–0524.

—**McDonnell Douglas Corp.**, Santa Monica, Calif. $1,000,000. Development, fabrication and testing of a Titan IIIC payload fairing subsystem. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0054.

15—**Honeywell, Inc.**, Hopkins, Minn. $12,915,788 (contract modification). Manufacture of ordnance and associated equipment. St. Louis Park, Minn. Armament Development & Test Center, Eglin AFB, Fla. F33657–68–C–0372.

—**F. D. Rich Co.**, Stamford, Conn. $3,846,000. Construction of a 200-unit family housing project at Grissom AFB, Ind. Grissom AFB, Ind. F12617–69–C–0101.

—**Urban Systems Development Corp.**, Arlington, Va. $2,753,953. Construction of 150 family housing units at Andrews AFB, Md. Andrews AFB, Md. F49642—69–C–0184.

16—**AVCO Corp.**, Wilmington, Mass. $2,600,000 (contract modification). Development and production of penetration aids. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–68–C–0021.

—**McDonnell Douglas Corp.**, Tulsa, Okla. $1,810,000. Inspection, repair and maintenance of ten RB–66B aircraft. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga. F34601–68–A–3933.

17—**Lockheed Aircraft**, Marietta, Ga. $48,800,000. Procurement of the first 23 C–5A airframes on Run B. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33 (657)–15053.

—**General Electric,** Cincinnati, Ohio. $68,115,081. Production of 99 TF39 engines for C–5A aircraft. Evendale, Ohio. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33 (657)–15003.

—**LTV, Inc.,** Greenville, Tex. $3,102,281. Modification of C–130 aircraft. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–68–C–0707.

—**General Electric,** Cincinnati, Ohio. $1,700,000. Production of support equipment for the T–64–GE–12 engine. Evendale, Ohio. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio.

—**Fairchild Hiller Corp.,** Farmingdale, N.Y. $5,496,000. Engineering and production of electronic counter measure equipment for F–105 aircraft. Sacramento Air Materiel Area, (AFLC), McClellan AFB, Calif. F04606–68–A–0003–0024.

—**General Dynamics,** San Diego, Calif. $3,718,784. Launch support services at Vandenberg AFB, Calif. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0052.

—**United Aircraft,** East Hartford, Conn. $3,344,580. Production of manifolds and nozzles applicable to J–57 aircraft engines. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex. N383–69000A.

21—**United Aircraft,** Statford, Conn. $2,145,277. Production of replacement spare parts for various helicopters. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ca. F09603–69–A–0029–0090.

—**Bendix Corp.,** Ann Arbor, Mich. $1,666,908. Production of classified airborne communications equipment. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–1099.

—**M.I.T.,** Cambridge, Mass. $1,000,000. Design and development of advanced instrumentation for missiles. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0162.

—**Arojet General,** Sacramento, Calif. $1,547,000. Overhaul, modification and hot-fire testing of Titan II propulsion systems. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–0772.

22—**Thiokol Corp.,** Bristol, Pa. $20,501,560. Production of Stage I Minuteman III motors for FY 1969. Brigham City, Utah. Space & Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–68–C–0173.

—**Lear Siegler, Inc.,** Grand Rapids, Mich. $4,002,910. A/A24G–26A control assemblies for F–111 aircraft. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–69–C–0662.

—**United Aircraft,** East Hartford, Conn. $3,164,616. Production of case assemblies applicable to J57 aircraft engines. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex. N383–69000A SA–69–850.

—**Goodyear Acrospace Corp.,** Akron, Ohio. $1,377,978. Production of air cargo handling pallets. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga. F09603–69–C–1946–P001.

23—**Fairchild Hiller Corp.,** Farmingdale, N.Y. $11,219,117. Modification of the F105 flight control and navigation system, and for modification and flight testing of the F–105 weapons delivery system. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ca. F04606–68–C–1055 (P010 and P011).

—**Air Logistics Corp.,** Pasadena, Calif. $1,198,948. 6,000-gallon capacity, aerial bulk fuel delivery system applicable to the C–130 aircraft. San Antonio Air Materiel Area, (AFLC), Kelly AFB, Tex.

24—**Raytheon Co.,** Bedford, Mass. $1,456,339. Flight test of airborne radar equipment. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–69–C–0379.

—**Hallicrafters Co.,** Rolling Meadows, Ill. $1,474,410. Production of components in support of airborne countermeasure transmitting systems. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga. F34601–68–A–2915.

—**Applied Technology Co.,** Palo Alto, Calif. $2,626,000. Kits, spares, training aids and data for installation of 14-channel video tape recorder for F–105F aircraft. Sacramento Air Materiel Area, (AFLC), McClellan AFB, Calif. F04606–69–A–0141–0002.

—**General Electric,** Syracuse, N.Y. $5,200,000. Test operations and related tasks in support of various Air Force programs. Space and Missile Systems Organization, (AFSC), Los Angeles, Calif. F04701–69–C–0050.

27—**Raytheon Co.,** Wayland, Mass. $10,500,000. Design, develop and test two prototype radar approach control systems. North Dighton, Mass. Electronic Systems Command, (AFSC), L. G. Hanscom Field, Mass. F19628–69–C–0094.

—**Hughes Aircraft,** Fullerton, Calif. $1,311,322. Production of electronic components. Electronic Systems Div., (AFSC), L. G. Hanscom Field, Mass. F19628–69–C–0188.

—**Westinghouse Electric Co.,** Baltimore, Md. $5,008,521. Production of spare parts for airborne radar equipment. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F34601–69–A–0034.

—**National Lead Co.,** Toledo, Ohio. $3,904,426. Production of bomb components. Batavia, N.Y. and Toledo, Ohio. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–2753.

—**Honeywell, Inc.,** Hopkins, Minn. $3,151,329. Production of bomb components. St. Louis Park, Minn. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–2700.

—**Gibbs Die Casting Aluminum Corp.,** Henderson, Ky. $1,560,532. Production of BLU–26/B fragmentation bombs. Ogden Air Materiel Area, (AFSC), Hill AFB, Utah. F42600–69–C–2754.

28—**Watkins Johnson Co.,** Palo Alto, Calif. $1,449,705. Production of directional finding equipment. Oklahoma City Air Materiel Area, (AFLC), Tinker AFB, Okla. F34601–68–C–4402.

—**Superior Steel Ball Co.,** New Britain, Conn. $1,440,000. Production of BLU 26 bomblet components. Washington, Ind. Ogden Air Materiel Area, (AFLC), Hill AFB, Utah. F42600–69–C–2751.

29—**Brooks & Perkins,** Detroit, Mich. $1,599,242. Production of large cargo pallets. Cadillac, Mich. Warner Robins Air Materiel Area, (AFLC), Robins AFB, Ga. F09063–69–A–0029–0002AA.

31—**General Electric,** West Lynn. Mass. $5,865,000. Production of CH–53D helicopter engines. Aeronautical Systems Div., (AFSC), Wright-Patterson AFB, Ohio. F33657–69–C–0005.

—**Lockheed Aircraft Service Co.,** Jamaica, N.Y. $4,088,107. Inspection, repair, and maintenance of C–121 aircraft. Sacramento Air Materiel Area, (AFLC), McClellan AFB, Calif. F4606–69–C–0005.

Contract for F–14A Awarded by Navy

The Navy has awarded a $40 million contract to Grumman Aircraft Engineering Corp., Bethpage, N. Y., for the engineering development phase of its new supersonic, carrier-based fighter, the F–14A. The aircraft will have an all-weather capability for delivery of the Phoenix, Sparrow and Sidewinder missiles using the AN/AWG–9 weapons control system. It will also have an air-to-ground attack capability and a modern air-to-air high performance gun.

The contract provides an initial funding of $40 million for research and development of pre-production of the F–14. Funding under the development contract will total $388 million over a period of approximately four years. The contract also gives the Navy the option to procure up to 463 production models of the F–14, following the development phase.

Surface Effect Ship Contracts Awarded

Contracts have been awarded to Aeroject-General Corp., El Monte, Calif., and Bell Aerosystems Co., Buffalo, N. Y., for research and development work on a 100-ton surface effect ship (SES) testcraft.

The contracts were awarded by the Maritime Administration of the Department of Commerce in a joint effort with the Navy to determine the feasibility of building and operating large, high-speed surface effect ships of 4,000 to 5,000 tons. Purpose of the program is to develop a testcraft which can provide vital information on alternate design configurations, structural, lift, propulsion and flexible seal systems in actual sea conditions.

Both contracts are cost plus incentive fee awards which will be incrementally funded. Current fiscal year funding for each contractor is $1.55 million, and will cover detailed engineering design. The contracts will be managed by the Join Surface Effect Ships Program Office which reports to both the Navy and the Commerce Department.

Army Awards TOW Production Contract

The Army has awarded a $55,371,527 contract to Hughes Aircraft Co. for production of the TOW (Tube-launched, Optically-tracked, Wire-guided) antitank assault missile system.

Under the contract, missiles will be manufactured by the Hughes facility at Tucson, Ariz. Launchers and ancillary equipment will be produced at sites in the Los Angeles, Calif., area.

The TOW system, capable of stopping all known types of armored vehicles, is controlled by two hair-thin wires that unreel after the weapon is fired and provide steering signals. The TOW missile is automatically guided to point of impact by keeping the sight on the target.

TOW is expected to replace the 106mm recoilless rifle as well as the Entac and SS–11 missiles. Project Manager for the system is Lieutenant Colonel Robert W. Huntzinger, U.S. Army Missile Command, Redstone Arsenal, Ala.

New Defense Team

Secretary of Defense

MELVIN R. LAIRD became Secretary of Defense on Jan. 22, 1969. He was administered the oath of office at a White House ceremony, together with other new cabinet members. When nominated, Secretary Laird represented the Seventh District of Wisconsin in the U. S. House of Representatives, where he had served continuously since 1952. Before becoming a member of the U. S. Congress, he served in the Wisconsin State Senate from 1946 to 1952. His major interests and committee work in Congress were in the areas of national security, education and health. He served on the House Appropriations Committee, House Committee on Agriculture, and various subcommittees including Defense; Labor; Health, Education and Welfare; and Military Construction. During World War II, Secretary Laird served in the U. S. Navy from 1942 to 1946. Mr. Laird was born on Sept. 1, 1922, in Omaha, Neb., and his family moved to Wisconsin the following year. He attended the Marshfield, Wis., public schools, and received his Bachelor of Arts degree from Carleton College, Northfield, Minn., in 1944.

Deputy Secretary of Defense

DAVID PACKARD was administered the oath of office of Deputy Secretary of Defense at a Pentagon ceremony on Jan. 24, 1969. Prior to assuming his new position, Secretary Packard was Chairman of the Board and Chief Executive Officer of the Hewlett-Packard Co., Palo Alto, Calif. The company was formed by Mr. Packard in partnership with William R. Hewlett in 1939 to design and manufacture electronics measurement instrumentation. The firm was incorporated in 1947 and has become an international organization engaged in design and manufacture of electronic, biomedical and analytical equipment. Mr. Packard was born in Pueblo, Colo., on Sept. 7, 1912, and attended public schools there. He entered Stanford University in 1930 and was graduated from that university with a Bachelor of Arts degree in 1934. He later returned to Stanford University where he received a degree in electrical engineering in 1939. In addition to his position with the Hewlett-Packard Co., Mr. Packard has also served as a director of several business organizations.

Secretary of the . . .

Army

STANLEY R. RESOR, who has served as Secretary of the Army since 1965, has been reappointed to the position. Before assuming this position, Secretary Resor was a partner in the New York City law firm of Debevoise, Plimpton, Lyons and Gates, specializing in corporate law. Secretary Resor was born in New York City on Dec. 5, 1917. He is a graduate of Groton School, Yale University, and the Yale Law School. He interrupted his law studies to serve with the Army during World War II from 1942 to 1946. Reverting to inactive status, he returned to Yale Law School and received a Bachelor of Law degree in June 1946.

Navy

JOHN H. CHAFEE assumed the position of Secretary of the Navy on Jan. 31, 1969. He was elected the Governor of Rhode Island in 1962, and re-elected to that office in 1964 and 1966. Prior to the governorship, he served as a member of the House of Representatives of the Rhode Island General Assembly for three terms. Secretary Chafee was born in Providence, R. I., on Oct. 22, 1922. He is a graduate of Yale University and the Harvard Law School. He served in the U. S. Marine Corps from 1942 to 1945. With the outbreak of the Korean War, he was recalled to active duty in 1951 and served in Korea until June 1953.

Air Force

ROBERT C. SEAMANS JR. became Secretary of the Air Force on Feb. 15, 1969. When appointed, he was the Jerome Clarke Hunsaker Professor, a Massachusetts Institute of Technology endowed visiting professorship in the Department of Aeronautics and Astronautics. From 1960 to 1968, he served in the National Aeronautics and Astronautics Administration, first as Associate and later as Deputy Administrator. Secretary Seamans was born in Salem, Mass., on Oct. 30, 1918. He holds a B. S. degree in engineering from Harvard University, and an M. S. degree in aeronautics and a doctorate in instrumentation from the Massachusetts Institute of Technology.

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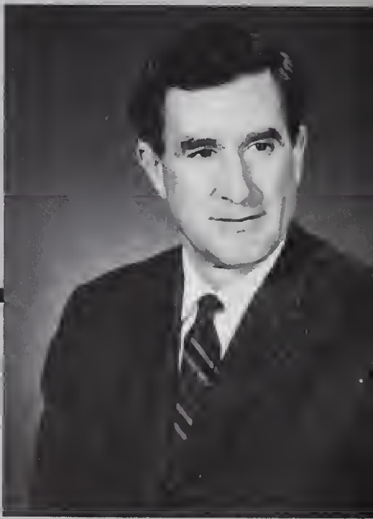
Stanley R. Resor
Secretary of the Army

John H. Chafee
Secretary of the Navy



Robert C. Seamans, Jr.
Secretary of the Air Force